

# **Part Three**

## **Alternatives and CEQA-Required Conclusions**



## 3.1 Alternatives to the Project

This chapter summarizes the various alternatives considered during preparation of the proposed Transportation 2030 Plan. Key features of each alternative are presented, and potential impacts are discussed and compared to the proposed Transportation 2030 Plan.

The CEQA Guidelines require EIRs to consider a reasonable range of alternatives to a proposed project or program. The range of alternatives shall include those that “would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project” (CEQA Guidelines, Section 15126.6(a)). “Feasible” means that the alternatives “are capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social and technological factors” (CEQA Guidelines, Section 15364). The alternatives may result in new impacts that do not result from the Proposed Project. The EIR need not analyze these alternatives at the same level of detail that it analyzes the project itself. The CEQA Guidelines require only that the EIR analyze the comparative merits of the alternatives. Also, the Guidelines permit analysis of alternatives at a less detailed level for program EIRs, compared to project EIRs. Quantified information on the alternatives is presented where available; however, in some cases only partial quantification can be provided because of data or analytical limitations.

Finally, the CEQA Guidelines require each EIR to identify the environmentally superior alternative among the alternatives analyzed. If the No Project alternative is the environmentally superior alternative, the EIR must select another from among the alternatives analyzed.

### ALTERNATIVES SCREENING

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Section 15126.6 of the CEQA Guidelines outlines the range of alternatives that the EIR should analyze. All EIRs must assess the “No Project” alternative. This alternative represents the scenario of not adopting the Transportation 2030 Plan and continuing with the current plan through the year 2030. The other alternatives depend on the type and setting of the project. The range of alternatives is determined by the “rule of reason.” That is, the EIR needs to analyze only those alternatives that will help decision-makers make reasoned choices. The EIR should also focus on alternatives that reduce or eliminate the identified impacts of the proposed project, even if those alternatives would impede to some degree the attainment of the project objectives or would be more costly. If the alternatives themselves would have significant environmental impacts, the EIR must identify them.

MTC generated a preliminary range of project alternatives for consideration in the EIR, and included them in the Notice of Preparation (NOP) for public comments (see Appendix A). These preliminary alternatives—the No Project, Financially Constrained A, Financially Constrained B, and New Concepts—were derived to attain most of the Transportation 2030 Plan goals and potentially lessen the environment effects in comparison to the Transportation 2030 Plan (Proposed Project). MTC discussed these preliminary alternatives with the Bay Area Partnership

and its Technical Advisory Committee as well as MTC's advisory committees as part of the EIR scoping process.

MTC evaluated the comments about the alternatives offered in letters in response to the NOP. The commenters suggested that MTC perform a system-wide analysis by aggregating individual projects in the I-880 corridor to evaluate impacts on neighboring cities; refer to lifeline access in the financially constrained alternatives; evaluate the effects of fully funding the transit capital replacement shortfall compared to a proposal to fund a lesser portion of the transit capital shortfall; produce a different mix of investments if MTC were to institute criteria based on transit ridership and density; and evaluate the environmental effects of not including the Bay Area Partnership's proposed principles for allocating federal discretionary funds over the next few years in light of the state financial crisis. MTC deemed the suggestion to develop an investment plan based on transit ridership and density criteria to be infeasible because such a plan would only minimally address all the objectives that the Transportation 2030 Plan (the Proposed Project) has laid out and seeks to achieve. In addition, MTC also considered the suggestion to evaluate an alternative based on short-term funding allocation principles to be infeasible because it would fail to address already identified long term transportation needs in the Bay Area and some short term funding issues can be addressed with new revenues contained in the Proposed Project. However, MTC agreed with comments pertaining to the system-wide analysis, lifeline access, and differential in funding for the transit capital replacement shortfall, and the alternatives selected for this EIR analysis reflect these suggestions.

## **ALTERNATIVES ANALYZED IN THIS EIR**

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In addition to the Proposed Project, this EIR analyzes five alternatives: No Project, Financially Constrained Transportation 2030 Plan, Financially Constrained Transportation 2030 Plan Plus Sales Tax, Financially Constrained Transportation 2030 Plan Plus High-Occupancy/Toll (HOT) Network, and TRANSDEF Smart Growth alternative. These alternatives were selected to provide MTC decision makers with a reasonable range of choices and guidance about the future transportation system of the Bay Area. These alternatives are also intended to reflect distinct differences with respect to investment, mobility, and environmental effects.

The Transportation 2030 Plan (Proposed Project) and the alternatives evaluated in this EIR share some common features, including local streets and roads maintenance, transit operating and capital replacement maintenance, regional operation programs such as Freeway Service Patrol (FSP), call boxes, TransLink®, and 511, and incentive programs such as Transportation for Livable Communities (TLC) and Housing Incentive Program (HIP). By varying the overall composition of the highway, roadway, transit, and other projects evaluated, the Proposed Project and each alternative offer a different approach to carrying out the goals of the Transportation 2030 Plan. The TRANSDEF Smart Growth alternative goes further by making its own assumptions about future land use patterns (different from ABAG's adopted *Projections 2003*) and implementing other pricing strategies for the region. The descriptions of the alternatives are provided below. A complete listing of projects by alternative is provided in Appendix C. Table 3.1-1 shows the differences in the supply of transportation system capacity between alternatives.

### **NO PROJECT ALTERNATIVE (ALTERNATIVE 1)**

The No Project alternative, required by CEQA, addresses the effects of not implementing the Transportation 2030 Plan. This alternative includes a set of highway, transit, local roadway, bicycle, and pedestrian projects that are in advanced planning stages and slated to go forward since they already have full funding commitments. These projects are: (1) included in the federally required Transportation Improvement Program (TIP), a three-year funding program of Bay Area project and programs, (2) not yet in the TIP but are fully funded county transportation sales projects authorized by voters in Alameda, Contra Costa, Santa Clara, San Mateo, and San Francisco counties, and (3) not yet in the TIP but fully funded through the Regional Measure 2 Toll Bridge Program that was approved by Bay Area voters in March 2003.

### **FINANCIALLY CONSTRAINED TRANSPORTATION 2030 PLAN ALTERNATIVE (ALTERNATIVE 2)**

This Financially Constrained alternative consists of only the set of transportation projects and programs that would be funded through revenues projected to be reasonably available over the 25-year horizon of the Transportation 2030 Plan. It does not include projects identified in the vision element of the Transportation 2030 Plan (as previously described in Chapter 1.2). The key financial assumption governing the financially constrained element of the Plan is that existing sources of federal, state, or regional revenues are assumed to continue to 2030 with the exception of county transportation sales tax measures which, by law, must sunset. No new revenue sources that would require voter or legislative approval are assumed. This alternative is based on the Commission's regional priorities (i.e., addressing the maintenance and rehabilitation needs for local streets and roads and transit, continuing implementation of regional operations and customer service programs, funding clean air programs, and continuing the Transportation for Livable Communities (TLC) and Housing Incentive Program (HIP) programs, etc.). In addition, county level priorities developed by the individual county Congestion Management Agencies (CMAs) in consultation with their local agencies and transit operators are also included. The county priorities have been reviewed with the public and adopted by the CMAs' governing boards.

### **FINANCIALLY CONSTRAINED TRANSPORTATION 2030 PLAN PLUS SALES TAX ALTERNATIVE (ALTERNATIVE 3)**

Five Bay Area counties—San Mateo, Contra Costa, Marin, Solano and Sonoma counties—will seek voter approval of new or reauthorized county transportation sales tax measures during the November 2004 elections. In this alternative, the Financially Constrained alternative will be expanded to include these potential sales-tax funded transportation projects and programs, which have been defined through the respective county planning and public involvement processes. Some common goals shared by the various county transportation sales tax plans are to keep the existing transportation system well-maintained; reduce and manage congestion on local roadways and highways; and support the use of transit, carpools, bicycling, and walking. Should these measures pass, the subset of transportation projects that become fully funded as a result of the new sales tax revenues will become part of the financially constrained element of the Transportation 2030 Plan when it is adopted in early 2005.

#### **FINANCIALLY CONSTRAINED TRANSPORTATION 2030 PLAN PLUS HIGH-OCCUPANCY/TOLL (HOT) NETWORK ALTERNATIVE (ALTERNATIVE 4)**

Building upon the investments considered in the Financially Constrained alternative, this alternative proposes to implement a toll pricing strategy to complete the regional HOV network and improve system efficiency. In this alternative, the Bay Area's existing High-Occupancy-Vehicle (HOV) lane system of 300 freeway lane miles, which saves time for vehicles with two or more occupants, would be converted to HOT lanes. Carpools, vanpools, and transit vehicles would continue to have free passage in the HOT lanes, but other motorists would pay a fee to use them. Vehicle occupancy rates for carpools/vanpools were increased to 3+ persons on all HOV lanes to create capacity for the new HOT lanes. The revenues generated by motorists who pay to use the lanes would be used to finance construction and operation of new HOV/HOT lanes where gaps exist in the HOV network, and to operate additional express bus and rideshare services for other corridor travelers. MTC would need federal and state legislative permission to implement the comprehensive HOT network envisioned in this alternative. The HOT network would consist of 800 miles of HOT lanes on Bay Area freeways, which is an additional 500 freeway lane miles over existing conditions (2000).

#### **TRANSPORTATION SOLUTIONS DEFENSE AND EDUCATION FUND (TRANSDEF) SMART GROWTH ALTERNATIVE (ALTERNATIVE 5)**

This alternative is supplied by TRANSDEF, a transportation advocacy organization, according to the Settlement Agreement and Release entered into by TRANSDEF, Citizens for Better Environment (CBE), Bay Area Air Quality Management District, and MTC in March 2004. This alternative includes a different set of land use assumptions for the region than in the other alternatives, by directing more future residential development in the Bay Area into transit supportive corridors, thus enhancing opportunities to use transit, bike and walk to various destinations. The alternative also includes new transportation pricing concepts affecting transit and road users, and aimed at encouraging travel on the region's bus and rail transit systems. The alternative minimizes expansion of the highway system while adding a broader network of Rapid Bus Transit (RBT) routes, expanding rail with equipment that uses conventional gauge rail tracks, and assuming implementation of a High Speed Rail network between Northern and Southern California via the Altamont Pass. Its purpose is to test the effectiveness of a planning strategy of accommodating regional growth by maximizing new residents' use of transportation modes other than single-occupant auto by limiting roadway capacity expansion and directing more potential growth into infill and transit-supportive areas in certain counties, avoiding greenfield development in other counties, and implementing pricing strategies to make driving more expensive and transit more attractive.

The underlying land use assumptions for the Proposed Project and all the financially constrained alternatives are ABAG's *Projections 2003*, which represent the outcome of the Bay Area region's recent regional smart growth planning project (called "Smart Growth Project"). These projections assume that the Bay Area will provide more housing opportunities near transit and also accommodate a larger share of future Bay Area workers within the nine Bay Area counties. In contrast, the TRANSDEF Smart Growth alternative uses its own set of land use assumptions patterned after the Network of Neighborhoods alternative, one of three conceptual land use patterns initially considered in the Smart Growth Project. This alternative has the same number

of residents and employees in the Bay Area as *Projections 2003*, but reduces the total residential land use uses in outlying rural and suburban areas while increasing residential construction in the urban core. In addition, TRANSDEF increases the net residential densities (i.e., number of households per residential acre) compared to *Projections 2003*. This type of development pattern would result in more conversion of existing low-intensity uses along arterial streets into mixed use commercial and housing as well as greater production of housing types such as apartments, condominiums and townhouses.

Whereas the other alternatives assume that existing transportation costs will remain the same, TRANSDEF proposes several pricing strategies to discourage travel in single occupant autos while increasing the attractiveness of using transit, biking, or walking: 1) a \$2.00/day parking charge at several high-demand BART stations, 2) a \$5.00/day parking charge at all employment sites (this charge is used as a surrogate for an employer provided parking-cash out program whereby employees would receive cash or free transit passes in an amount equivalent to what an employer would normally spend on employee parking), and 3) a 20 percent reduction in transit fares (this fare reduction is used as a surrogate for a residential Ecopass system for new residential developments whereby residents would pay for monthly transit passes through their rent or condominium fees). The alternative also would institute a regionwide free transfer policy for riders using multiple transit systems. In addition, widespread ramp metering is assumed in this alternative.

The TRANSDEF Smart Growth alternative also includes a markedly different set of transportation projects and programs than the other alternatives, and does not assume that fully funded projects will be implemented if they are not currently under contract. A total of 261 projects from the Financially Constrained Plus Sales Tax alternative were not included in this alternative, many of which are roadway projects. Roadway projects that were eliminated range from major interchange improvements such as the I-80/I-680/I-780 interchange improvements in Solano County; highway widenings such as Caldecott Tunnel fourth bore and Route 4 widening to 8 lanes with HOV lanes from Loveridge Road to Somersville Road in eastern Contra Costa County; and HOV projects such as the I-680 northbound HOV lane from Route 237 to Stoneridge Drive in Alameda County. In addition, BART extensions to Warm Springs and San Jose/Santa Clara were not included; and new transit services such as a TRANSDEF-defined regionwide Rapid Bus Transit (BRT) system, Diesel Multiple Unit (DMU) trains on conventional rail tracks, and upgraded Caltrain network (including electrification) were added. This alternative also assumes voter approval of a High Speed Rail system over the Altamont Pass serving San Francisco, Millbrae, Redwood City, Newark, Fremont, San Jose, Milpitas, and Livermore.

Overall, the TRANSDEF alternative would require a new approach to local land use planning absent regulatory power to require such changes at the local level. Several TRANSDEF pricing initiatives would require new authority. TRANSDEF believes MTC has authority to condition certain federal funds to local jurisdictions, although the amount of funds that would be conditioned are only a small fraction of the total transportation funding that is considered in the Transportation 2030 Plan. The ability to fund the operation and rehabilitation of the expanded transit network in this alternative has not been fully analyzed from a financial perspective. A number of transportation projects that were eliminated were approved by local voters, and would require counties to place new measures on a local ballot to shift funding over to new projects in

the TRANSDEF alternative. (See Appendix D for additional information on the TRANSDEF Smart Growth alternative).

## **COMPARATIVE IMPACT ANALYSIS**

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MTC may adopt any of the alternatives included in this EIR. The primary differences between the Proposed Project and the alternatives are the assumptions on future land use development and distribution, strategies affecting the price of using the Bay Area's transportation system, and assumptions concerning the amount of funding available for future transportation improvements. The Proposed Project and the three financially constrained alternatives are based on the land use projections adopted by ABAG (*Projections 2003*). The TRANSDEF Smart Growth alternative has its own set of land use assumptions patterned after the Network of Neighborhoods alternative from ABAG's Smart Growth Project. These land use assumptions are those of TRANSDEF and have not been reviewed with local governments or the public, other than through the Smart Growth process.

The Proposed Project and the financially constrained alternatives share the same pricing assumptions such as parking costs and transit fares. However, the TRANSDEF Smart Growth alternative proposes several new pricing policies, including free transfers between all major transit operators, a \$2.00/day parking fee at several high-demand BART stations, a 20 percent reduction in transit fares (as a surrogate for a mandatory residential transit eco-pass purchase program for occupants of new housing developments), and a \$5.00/day parking fee for commuters (as a surrogate for a regional employer parking cash out program).

The mix of roadway, highway, and transit investments assumed in the transportation network also varies amongst the Proposed Project and the alternatives depending on the financial assumptions. The Financially Constrained alternative assumes \$113 billion in revenues will be available over the next 25 years. In addition to the \$113 billion in revenues, the Financially Constrained Plus Sales Tax assumes an additional \$5.7 billion in new sales tax revenues, while the Financially Constrained Plus HOT assumes an additional \$3 billion of toll revenues. The TRANSDEF alternative includes revenues from new pricing strategies that TRANSDEF believes can be invoked through existing agency authority and powers, but which do not actually exist today. Because of the financial constraints, the transportation networks for these alternatives are far less extensive than the Proposed Project.

Unlike the alternatives, the Proposed Project is not financially constrained; it includes new revenue sources that MTC reasonably believes could be implemented through anticipated future voter or legislative action over the next 5 to 10 years. Although federal planning regulations require that MTC identify a set of projects that can be delivered based on reasonably available funding, these requirements do not preclude MTC from adopting a plan that includes additional projects that could be funded with new revenues. Because of its assumptions about the potential for new transportation funding, the Proposed Project has the most extensive transportation network, which includes both HOT lane projects and potential new county sales tax measure projects.



## **ANALYSIS OF THE TRANSDEF SMART GROWTH ALTERNATIVE ASSUMPTIONS**

The TRANSDEF Smart Growth alternative has significantly different land use and pricing assumptions than the Proposed Project and the financially constrained alternatives. To provide additional information on the impact of these assumptions on certain transportation outcomes, MTC conducted an analysis to isolate the impacts of the TRANSDEF Smart Growth alternative's land use and pricing assumptions. Comparing land use assumptions (see Table 3.1-1), the TRANSDEF Smart Growth alternative results in 2,397,700 transit trips using TRANSDEF's land use assumptions, but drops to 2,148,000 transit trips using ABAG's *Projections 2003*<sup>1</sup>. Thus, the difference of 249,000 transit trips is due to TRANSDEF's land use assumptions, which place more people in the urban core where the transit system is most extensive. To determine the effect of TRANSDEF's pricing strategies and proposed highway and transit projects on transit ridership, ABAG's land use assumptions were used for the TRANSDEF alternative, and then the TRANSDEF results were compared to the No Project alternative. This showed that, holding land use constant, TRANSDEF increased transit trips by 421,000 over the No Project alternative<sup>2</sup>. Thus, MTC estimates that TRANSDEF's land use assumptions are responsible for about 37 percent of the transit ridership increase and the remaining 63 percent is due to pricing and transportation network changes.

In addition, MTC estimated the average trip costs for drive alone work trips and transit trips in the No Project alternative and TRANSDEF alternative (average trip costs represent the full set of out-of-pocket costs, including gasoline operating costs, non-gasoline operating costs, parking charges and transit fares). For drive alone work trips, MTC estimates the average trip cost to be \$1.30 per trip for the No Project alternative and \$1.50 per trip for the TRANSDEF Smart Growth alternative. Thus, the TRANSDEF alternative increases drive alone work trip costs by 15.4 percent. However, for transit trips (transit trips include both work and non work trip purposes), MTC estimates that the average transit trip cost is \$1.70 per trip for the No Project alternative and \$1.34 per trip for the TRANSDEF Smart Growth alternative. Thus, the TRANSDEF alternative lowers the average per trip cost for transit users by 21.2 percent. From these calculations, it appears that the benefits of the TRANSDEF land use and pricing assumptions are directed more heavily towards transit users, while drive alone auto users would experience higher travel costs.

It should also be noted that the demographic data assumptions in the TRANSDEF Smart Growth alternative produces different regional auto ownership rates compared to the Proposed Project and the other alternatives<sup>3</sup>. This difference is important because auto ownership rates affect trip generation rates and mode choice. Typically, lower auto ownership rates result in lower trip generation rates and higher use of non-auto modes. In addition, multi-vehicle households will likely make more vehicle trips but less transit trips than zero- and single-vehicle households who do not own a vehicle, compete for use of the household vehicle, or use transit (or other modes) because of the lack of access to a vehicle. For this EIR analysis, the regional auto ownership rates for the Proposed Project and Financially Constrained alternatives are the same. As shown in

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<sup>1</sup> Numbers included in the narrative have been rounded.

<sup>2</sup> Numbers included in the narrative have been rounded.

<sup>3</sup> Inputs into MTC's auto ownership model include density, income, household size, structure types, workers in households, and relative transit-to-highway accessibility. The regional values for income and household size are the same for the Proposed Project and TRANSDEF Smart Growth alternative.

Table 3.1-2, the TRANSDEF Smart Growth alternative, however, produces a higher number of zero-vehicle households (36.6 percent increase) but lower number of multi-vehicle households (9 percent decrease) compared to the Proposed Project. Overall, the TRANSDEF Smart Growth alternative produces a net decrease of 6.5 percent for the average number of vehicles per household compared to the Proposed Project. This would be expected because the TRANSDEF Smart Growth alternative increases densities and brings more households in San Francisco, resulting in higher predilection for lower vehicles per households. Therefore, the TRANSDEF Smart Growth alternative yields lower auto ownership rates, which in turn, yields lower trip generation rates and a different mode choice (i.e., lower vehicle trips) compared to the Proposed Project and the other alternatives.

**Table 3.1-1: Bay Area Regional Trips by Trip Purpose and Travel Mode (2000 to 2030)**

	2000	2030 Project	2030 No Project	2030 Financially Constrained	2030 Financially Constrained + HOT	2030 Financially Constrained + Sales Tax	2030 TRANSDEF Smart Growth Alternative	2030 TRANSDEF Smart Growth Alternative (Projections 2003) <sup>1</sup>
Auto	17,597,300	<b>23,583,600</b>	23,719,700	23,705,600	23,687,000	23,707,500	22,615,000	23,172,300
Transit	1,175,600	<b>1,869,700</b>	1,727,000	1,745,500	1,755,000	1,742,600	2,397,300	2,148,400
Bicycle	310,600	<b>403,100</b>	405,200	403,800	407,400	404,300	433,000	417,500
Walk	1,950,400	<b>2,636,400</b>	2,640,900	2,640,000	2,643,500	2,639,400	2,829,200	2,754,600
Total	21,033,800	<b>28,492,900</b>	28,492,900	28,492,900	28,492,900	28,492,900	28,274,500	28,492,900
Truck Trips	3,404,400	<b>4,654,500</b>	4,654,500	4,654,500	4,654,500	4,647,800	4,647,800	4,647,800
Interregional Vehicle Trips <sup>2</sup>	572,200	<b>1,042,000</b>	1,042,000	1,042,000	1,042,000	1,042,000	1,042,000	1,042,000
Intrarregional Vehicle Trips <sup>3</sup>	13,121,500	<b>17,772,800</b>	17,868,100	17,852,100	17,842,300	17,861,500	16,975,000	17,481,100
Total Vehicle Trips	17,098,100	<b>23,469,400</b>	23,564,600	23,548,700	23,538,800	23,551,400	22,664,900	23,170,900
Non-Work-Auto	13,153,400	<b>17,382,100</b>	17,433,900	17,425,500	17,419,300	17,424,000	16,707,700	17,019,800
Non-Work-Transit	603,400	<b>864,300</b>	810,800	819,100	819,400	820,900	1,273,900	1,103,900
Non-Work-Bicycle	250,300	<b>301,000</b>	301,500	300,600	303,300	300,900	307,500	311,900
Non-Work-Walk	1,778,400	<b>2,389,900</b>	2,392,100	2,392,100	2,395,200	2,391,500	2,522,200	2,501,600
Non-Work-Total	15,786,500	<b>20,937,300</b>	20,937,300	20,937,300	20,937,300	20,937,300	20,811,400	20,937,300

<sup>1</sup>TRANSDEF Smart Growth alternative using ABAG's Projections 2003

<sup>2</sup>Interregional trips mean vehicle trips that start within the region and end outside of the region, or vice-versa

<sup>3</sup>Intrarregional trips mean vehicle trips that start within the region and end within the region

Source: Metropolitan Transportation Commission, 2004

**Table 3.1-2: Summary of Regional Household Auto Ownership & Workers in Household Forecasts (2000 to 2030)**

	2000	2030 Project	2030 TRANSDEF Smart Growth	Numerical and % Difference of 2030 TRANSDEF Smart Growth from 2030 Project	
Non-Working Households	520,700	692,300	731,700	39,400	5.7%
Single-Worker Households	915,300	1,206,100	1,200,800	-5,400	-0.4%
Multi-Worker Households	1,030,000	1,288,100	1,254,200	-34,000	-2.6%
Total Households	2,466,000	3,186,600	3,186,600	0	0.0%
Zero-Vehicle Households	247,200	311,400	425,400	114,100	36.6%
Single-Vehicle Households	816,200	967,200	1,025,000	57,800	6.0%
Multi-Vehicle Households	1,402,500	1,908,000	1,736,200	-171,900	-9.0%
Total Household Vehicles	4,325,000	5,746,700	5,371,100	-375,600	-6.5%
Average Vehicles/Household	1.75	1.80	1.69	-0.12	-6.5%
Share, Zero-Vehicle Households	10.0%	9.8%	13.4%		
Share, Single-Vehicle Households	33.1%	30.4%	32.2%		
Share, Multi-Vehicle Households	56.9%	59.9%	54.5%		

Source: Metropolitan Transportation Commission, 2004

The following subsections describe and compare the issue area impacts of the various alternatives to the Proposed Project. The comparisons are summarized in Table 3.1-23 at the end of this chapter.

## **TRANSPORTATION**

### ***Proposed Transportation System Capacity Increases (Supply)***

Table 3.1-3 presents the differences in the supply of the transportation system among the alternatives. The transit supply for the 2030 No Project alternative is based on 2004 transit service levels, which reflect recent cuts in service, and therefore is much lower in 2030 than in 2000 (about 650,000 transit passenger seat miles lower in 2030, or 33 percent less).

The Proposed Project transit supply is about 6.5 percent higher than existing conditions (2000). The Proposed Project includes new sales taxes in Alameda, Marin, Sonoma and Santa Clara counties, which provides funding to restore local bus transit service to 2000 levels for AC Transit, Golden Gate Transit, and VTA. These sales taxes, along with HOT lanes and new or reauthorized sales taxes in the other five Bay Area counties, sustain existing transit service levels and expand express bus services throughout the region. The Financially Constrained and Financially Constrained Plus HOT alternatives provide very similar transit supply levels to the No Project because no new service is being operated compared to 2004 levels. The Financially Constrained Plus Sales Tax alternative increases transit supply compared to the No Project by expanding some new rail and express bus services and restoring some local bus services.

In general, increased investment in local roadway, highway, and transit projects will result in more travel options, faster speeds, and shorter travel times. Because the Proposed Project includes the greatest amount of new transportation revenues, this alternative also produces the greatest expansion of the Bay Area's transportation network. In contrast, all the Financially Constrained alternatives, which assume only the set of reasonably available transportation funds over the next 25 years, have relatively lower levels of investments compared to the Proposed Project (up to 2 percent less in roadway supply and up to 34 percent less in transit supply). The TRANSDEF Smart Growth alternative provides for about 4.2 percent less roadway supply and about 22 percent less transit supply compared to the Proposed Project. Notably, the TRANSDEF Smart Growth alternative reduces freeway HOV lane miles by 50 percent compared to the Proposed Project.

### ***Projected Changes in Transportation Mode and Vehicle Travel***

Table 3.1-4 shows the differences in regional travel activity amongst the alternatives. A few key transportation mode and vehicle travel changes are worth highlighting. For example, compared to all the alternatives, the land use and pricing assumptions in the TRANSDEF Smart Growth result in the most significant changes in transportation mode share compared to the Proposed Project – a 4.1 percent reduction in auto use, 28.2 percent increase in transit use, and about 7 percent increase each in bicycling and walking. All the Financially Constrained alternatives result in a 6 to 7 percent decrease in transit use given that these alternatives have up to 34 percent less transit supply compared to the Proposed Project. In terms of transit use, the TRANSDEF Smart Growth

**Table 3.1-3: Roadway Lane Miles and Transit Seat Miles (2000 to 2030)**

	2000	2030 Project	2030 No Project	Difference from Proposed Project		2030 Financially Constrained	Difference from Proposed Project		2030 Financially Constrained + HOT	Difference from Proposed Project		2030 Financially Constrained + Sales Tax	Difference from Proposed Project		2030 TRANSEF Smart Growth	Difference from Proposed Project	
				Difference from Proposed Project	Difference from Proposed Project		Difference from Proposed Project	Difference from Proposed Project		Difference from Proposed Project	Difference from Proposed Project		Difference from Proposed Project	Difference from Proposed Project		Difference from Proposed Project	Difference from Proposed Project
Freeways	4,500	5,400	4,800	-11.1%	-5.6%	5,100	-5.6%	-5.6%	5,300	-1.9%	-1.9%	5,100	-5.6%	-5.6%	4,900	-9.3%	-9.3%
Mixed Flow	4,300	4,600	4,400	-4.3%	-2.2%	4,500	-2.2%	-2.2%	4,500	-2.2%	-2.2%	4,600	0.0%	0.0%	4,500	-2.2%	-2.2%
HOV	300	800	400	-50.0%	-25.0%	600	-25.0%	-25.0%	800	0.0%	0.0%	600	-25.0%	-25.0%	400	-50.0%	-50.0%
Expressways	1,000	1,100	1,000	-9.1%	0.0%	1,100	0.0%	0.0%	1,100	0.0%	0.0%	1,100	0.0%	0.0%	1,000	-9.1%	-9.1%
Mixed Flow	900	1,000	1,000	0.0%	0.0%	1,000	0.0%	0.0%	1,000	0.0%	0.0%	1,000	0.0%	0.0%	900	-10.0%	-10.0%
HOV	0	100	100	0.0%	-100.0%	0	-100.0%	-100.0%	100	0.0%	0.0%	0	-100.0%	-100.0%	0	-100.0%	-100.0%
Arterial / Other	14,600	15,100	14,900	-1.3%	-0.7%	15,000	-0.7%	-0.7%	15,000	-0.7%	-0.7%	15,000	-0.7%	-0.7%	14,900	-1.3%	-1.3%
<b>Roadway Lane Miles Total</b>	20,100	21,600	20,700	-4.2%	-2.3%	21,100	-2.3%	-2.3%	21,400	-0.9%	-0.9%	21,200	-1.9%	-1.9%	20,700	-4.2%	-4.2%
High-Occupancy/Toll (HOT)	0	800	0	-100.0%	-100.0%	0	-100.0%	-100.0%	800	0.0%	0.0%	0	-100.0%	-100.0%	0	-100.0%	-100.0%
Bus Transit	1,912,700	2,037,400	1,262,700	-38.0%	-38.3%	1,256,600	-38.3%	-38.3%	1,256,600	-38.3%	-38.3%	1,477,370	-27.5%	-27.5%	1,368,600	-32.8%	-32.8%
Light Rail Transit	179,600	280,500	206,500	-26.4%	-8.3%	257,100	-8.3%	-8.3%	257,100	-8.3%	-8.3%	252,200	-10.1%	-10.1%	278,500	-0.7%	-0.7%
Rail Rapid Transit	1,059,600	1,918,800	1,087,700	-43.3%	-41.3%	1,125,400	-41.3%	-41.3%	1,125,400	-41.3%	-41.3%	1,187,200	-38.1%	-38.1%	1,654,000	-13.8%	-13.8%
Commuter Rail Transit	678,700	828,000	762,800	-7.9%	-8.7%	756,100	-8.7%	-8.7%	756,100	-8.7%	-8.7%	756,100	-8.7%	-8.7%	653,100	-21.1%	-21.1%
Ferry Transit	110,900	227,100	126,800	-44.2%	-44.2%	126,800	-44.2%	-44.2%	126,800	-44.2%	-44.2%	169,400	-25.4%	-25.4%	173,700	-23.5%	-23.5%
<b>Transit Seat Miles Total</b>	3,941,300	5,291,800	3,446,600	-34.9%	-33.4%	3,521,900	-33.4%	-33.4%	3,521,900	-33.4%	-33.4%	3,842,270	-27.4%	-27.4%	4,127,900	-22.0%	-22.0%

Source: Metropolitan Transportation Commission, 2004

alternative has a 28.2 percent increase in daily transit boardings compared to the Proposed Project, but due to the constrained road investment, produces a 24.3 increase in daily vehicle hours of delay and a 28.7 percent increase in average delay per vehicle compared to the Proposed Project. While transit use does increase under the TRANSDEF Smart Growth alternative to a total of 2.4 million daily transit trips, the resulting adverse impact on vehicle hours of delay and average delay per vehicle would be significant for the 22.6 million daily vehicle trips forecasted for 2030 under this alternative. The vehicle delay impact is most significant for Marin County (98.1 percent increase in vehicle hours of delay), Napa County (54.8 percent increase in vehicle hours of delay), and Contra Costa County (44.2 percent increase in vehicle hours of delay) as shown in Table 3.1-5. In addition, relative to the other alternatives, the Financially Constrained Plus HOT alternative results in the least increase in daily vehicle hours of delay (8 percent increase), followed by the TRANSDEF Smart Growth (24.3 percent), Financially Constrained (26.6 percent), and then the Financially Constrained Plus Sales Tax (34.1 percent).

#### *Average Travel Time Per Trip*

As shown in Table 3.1-6, compared to the Proposed Project, all the alternatives would result in relatively longer average travel times per trip for all trips except for non-work trips under the Financially Constrained Plus Sales Tax alternative (0.2 percent decrease in average travel time per trip) and truck trips under the TRANSDEF Smart Growth alternative (0.9 percent decrease in average travel time per trip). Since the Proposed Project provides for the most extensive level of transportation system expansion (supply), the average travel time per trip is lower compared to all the alternatives.

#### *Accessibility to Jobs*

The Proposed Project generally increases accessibility to jobs by auto and transit due to the extensive level of transportation improvements provided as well as the transit-oriented land use pattern assumed in ABAG's *Projections 2003* as shown in Table 3.1-7. Amongst the alternatives, the TRANSDEF Smart Growth alternative results in the greatest improvement in job access by autos and transit (e.g., for jobs within 45 minutes, a 13.9 percent increase by transit and 5.1 percent increase by auto) compared to the Proposed Project. This improvement in accessibility to jobs is due to the approach taken by TRANSDEF to redistribute regional growth and further intensify new development densities beyond ABAG's *Projections 2003*. All the Financially Constrained alternatives perform less well under this measure when compared to the Proposed Project due to less robust levels of transportation investment.

**Table 3.1-4: Projected Changes in Travel Behavior (2000 to 2030)**

	2000	2030 Project	2030 No Project	Difference from Proposed Project	2030 Financially Constrained	Difference from Proposed Project	2030 Financially Constrained + HOT	Difference from Proposed Project	2030 Financially Constrained + Sales Tax	Difference from Proposed Project	2030 TRANSEDEF Smart Growth	Difference from Proposed Project
<b>Trips by Means of Transportation</b>												
Auto	17,597,300	23,583,600	23,719,700	0.6%	23,704,600	0.5%	23,687,000	0.4%	23,706,500	0.5%	22,615,000	-4.1%
Transit	1,175,600	1,869,700	1,727,000	-7.6%	1,744,500	-6.7%	1,755,000	-6.1%	1,742,600	-6.8%	2,397,300	28.2%
Bicycle	310,600	403,100	405,200	0.5%	403,800	0.2%	407,400	1.1%	404,300	0.3%	433,000	7.4%
Walk	1,950,400	2,636,400	2,640,900	0.2%	2,640,000	0.1%	2,643,500	0.3%	2,639,400	0.1%	2,829,200	7.3%
Total	21,033,800	28,492,900	28,492,900	0.0%	28,492,900	0.0%	28,492,900	0.0%	28,492,900	0.0%	28,274,500	-0.8%
<b>Share of Trips by Means of Transportation</b>												
Auto	83.7%	82.8%	83.2%		83.2%		83.1%		83.2%		80.0%	
Transit	5.6%	6.6%	6.1%		6.1%		6.2%		6.1%		8.5%	
Bicycle	1.5%	1.4%	1.4%		1.4%		1.4%		1.4%		1.5%	
Walk	9.3%	9.3%	9.3%		9.3%		9.3%		9.3%		10.0%	
Total	100.0%	100.0%	100.0%		100.0%		100.0%		100.0%		100.0%	
Daily Transit Boardings	1,714,300	2,815,500	2,504,400	-11.0%	2,538,800	-9.8%	2,559,000	-9.1%	2,543,100	-9.7%	3,610,100	28.2%
Daily Vehicle Trips	17,098,100	23,469,400	23,564,600	0.4%	23,548,700	0.3%	23,538,800	0.3%	23,551,400	0.3%	22,664,900	-3.4%
Daily Vehicle Miles of Travel (VMT)	143,495,300	200,878,200	203,072,600	1.1%	202,823,500	1.0%	202,480,900	0.8%	203,063,100	1.1%	196,465,700	-2.2%
Daily Vehicle Hours of Delay (VHD)	355,600	721,300	1,073,900	48.9%	913,000	26.6%	779,100	8.0%	967,000	34.1%	896,400	24.3%
Average Delay per Vehicle (Minutes)	1.2	1.8	2.7	48.3%	2.3	26.2%		7.7%	2.5	33.6%	2.4	28.7%

Source: Metropolitan Transportation Commission, 2004



**Table 3.1-5: Average Weekday Daily Vehicle Hours of Delay (VHD) by County of Occurrence (2000 to 2030)**

	2000	2030 Project	2030 No Project	Difference from Proposed Project	2030 Financially Constrained	Difference from Proposed Project	2030 Financially Constrained + HOT	Difference from Proposed Project	2030 Financially Constrained + Sales Tax	Difference from Proposed Project	2030 TRANSEDEF Smart Growth	Difference from Proposed Project
Alameda	77,300	190,500	317,500	66.7%	249,000	30.7%	209,900	10.2%	283,800	49.0%	262,700	37.9%
Contra Costa	49,300	78,100	117,100	49.9%	98,800	26.5%	89,500	14.6%	110,900	42.0%	112,600	44.2%
Marin	26,300	21,500	47,300	120.0%	42,700	98.6%	25,400	18.1%	40,900	90.2%	42,600	98.1%
Napa	3,200	6,200	11,800	90.3%	9,500	53.2%	6,200	0.0%	10,200	64.5%	9,600	54.8%
San Francisco	18,200	35,600	55,900	57.0%	47,200	32.6%	45,700	28.4%	52,600	47.8%	38,000	6.7%
San Mateo	35,900	64,000	84,200	31.6%	79,000	23.4%	70,300	9.8%	78,500	22.7%	83,000	29.7%
Santa Clara	100,200	203,800	256,400	25.8%	225,700	10.7%	205,500	0.8%	233,600	14.6%	211,000	3.5%
Solano	19,000	87,800	131,200	49.4%	111,300	26.8%	89,000	1.4%	113,300	29.0%	92,700	5.6%
Sonoma	26,300	33,900	52,700	55.5%	49,900	47.2%	37,600	10.9%	43,200	27.4%	44,200	30.4%
Bay Area	355,600	721,300	1,073,900	48.9%	913,000	26.6%	779,100	8.0%	967,000	34.1%	896,400	24.3%

Source: Metropolitan Transportation Commission, 2004

**Table 3.1-6: Average Travel Time per Trip (2000 to 2030)**

		2000		2030		Difference from Proposed Project		2030 Financially Constrained + HOT Lanes		Difference from Proposed Project		2030 Financially Constrained + Sales Tax		Difference from Proposed Project		2030 TRANSDEF Smart Growth		Difference from Proposed Project	
		<b>2000 Project</b>	<b>2030 No Project</b>																
Work Trips, Total	28.4	<b>31.1</b>	31.8		2.3%	31.1	0.0%	31.6	1.6%	31.3	0.7%	31.8	2.1%						
Non-Work Trips, Total	15.8	<b>16.0</b>	16.1		0.6%	16.0	0.0%	16.1	0.6%	16.0	-0.2%	16.2	1.2%						
Personal Trips, Total	18.9	<b>20.0</b>	20.2		1.0%	20.0	0.0%	20.2	1.0%	20.0	0.2%	20.3	1.5%						
Truck Trips, Total	11.4	<b>11.4</b>	11.5		0.9%	11.4	0.0%	11.5	0.9%	11.4	0.0%	11.3	-0.9%						

Source: Metropolitan Transportation Commission, 2004

**Table 3.1-7: Accessibility to Jobs (2000 to 2030)**

		2000		2030		Difference from Proposed Project		2030 Financially Constrained		Difference from Proposed Project		2030 Financially Constrained + HOT		Difference from Proposed Project		2030 Financially Constrained + Sales Tax		Difference from Proposed Project		2030 TRANSDEF Smart Growth		Difference from Proposed Project	
		2000	2030	2000	2030	2000	2030	2000	2030	2000	2030	2000	2030	2000	2030	2000	2030	2000	2030	2000	2030	2000	2030
Number of Total Jobs Accessible by Auto																							
Within	15 minutes	109,200	133,300	131,400	-1.4%	133,700	0.3%	122,800	-7.9%	133,400	0.1%	149,600	12.2%										
	30 minutes	476,800	569,800	553,500	-2.9%	567,300	-0.4%	553,100	-2.9%	570,800	0.2%	609,000	6.9%										
	45 minutes	960,300	1,114,300	1,076,000	-3.4%	1,104,400	-0.9%	1,081,300	-3.0%	1,110,200	-0.4%	1,171,400	5.1%										
Number of Total Jobs Accessible by Transit																							
Within	15 minutes	5,100	7,900	7,000	-11.4%	7,200	-8.9%	6,900	-12.7%	7,200	-8.9%	11,100	40.5%										
	30 minutes	41,200	66,800	57,700	-13.6%	58,400	-12.6%	57,400	-14.1%	58,400	-12.6%	83,400	24.9%										
	45 minutes	136,000	211,400	176,300	-16.6%	179,400	-15.1%	177,200	-16.2%	177,900	-15.8%	240,800	13.9%										

Source: Metropolitan Transportation Commission, 2004

### *Daily Vehicle Trips*

As shown in Table 3.1-8, all the Financially Constrained alternatives produce a slight increase in daily vehicle trips in the region over the Proposed Project (up to 0.5 percent increase), largely because of their more limited investment in transit. Conversely, compared to the Proposed Project, the TRANSDEF Smart Growth alternative, with its redistribution of regional growth and focus on transit expansion projects, reduces regional daily vehicle trips, particularly in Solano County (9.8 percent reduction in daily vehicle trips) and Alameda County (8.8 percent reduction in vehicle trips). However, as discussed previously, compared to the Proposed Project, the TRANSDEF Smart Growth alternative also results in a 24.3 percent increase in daily vehicle hours of delay due to its deletion of many planned projects to expand roadway capacity (although this is comparatively less than the daily vehicle hours of delay of the Financially Constrained (26.2 percent) and Financially Constrained Plus Sales Tax (34.1 percent) alternatives).

### *Vehicle Miles Traveled (VMT) by Facility Type and Volume to Capacity Ratio (V/C)*

As shown in Table 3.1-9, the amount of vehicle miles traveled at LOS F in the Proposed Project would increase by about 92 percent on all facilities types over existing conditions (2000). Comparing between alternatives, all the alternatives result in higher vehicle miles traveled at LOS F for all facility types compared to the Proposed Project. One exception is that the Financially Constrained Plus HOT alternative, which reduces vehicle miles traveled at LOS F on expressways and arterials by 9.5 percent compared to the Proposed Project; this is likely because more auto users are taking advantage of the freeway HOT lanes.

## **AIR QUALITY**

Table 3.1-10 shows the travel data used in the air quality analysis, and Table 3.1-11 presents the emissions estimates for the Proposed Project and each alternative. The Proposed Project and all the alternatives result in considerably lower vehicle emissions for ROG, NO<sub>x</sub>, and CO than existing conditions (2000) due to the retirement of older, more polluting automobiles and their replacement with vehicles that have substantially lower emissions and through implementation of other mobile source control measures (such as the Bay Area's Enhanced Smog Check program). Emissions for PM<sub>10</sub> and PM<sub>2.5</sub> will increase because of increased travel on Bay Area roads, which disturbs dust on local roads and freeways and produces more road dust in the air (entrained dust). Compared to the Proposed Project, all the alternatives produce slightly higher emissions for all the criteria pollutants (generally less than a two percent change), except for the TRANSDEF Smart Growth alternative, which results in slightly lower emissions (less than two percent change) due to reduced auto trips. However, given regional progress in lowering ozone and carbon monoxide levels, differences in alternatives in 2030 are not significant. Regarding particulate matter, the major increases are due to growth in regional travel between now and 2030, and differences between alternatives and the Proposed Project are small (less than 2 percent in emissions).

**Table 3.1-8: Average Weekday Daily Vehicle Trips by County-of-Origin<sup>1</sup>**

	2000	2030 Project	2030 No Project	Difference from Proposed Project	2030 Financially Constrained	Difference from Proposed Project	2030 Financially Constrained + HOT	Difference from Proposed Project	2030 Financially Constrained + Sales Tax	Difference from Proposed Project	2030 TRANSEDF Smart Growth	Difference from Proposed Project
<b>County-of-Origin</b>												
San Francisco	1,087,700	1,289,600	1,304,000	1.1%	1,302,900	1.0%	1,299,300	0.8%	1,302,300	1.0%	1,259,200	-2.4%
San Mateo	1,624,800	2,077,800	2,090,500	0.6%	2,087,700	0.5%	2,084,400	0.3%	2,088,100	0.5%	2,097,800	1.0%
Santa Clara	3,921,300	5,364,300	5,380,800	0.3%	5,379,200	0.3%	5,380,200	0.3%	5,384,100	0.4%	5,175,600	-3.5%
Alameda	2,555,400	3,489,400	3,521,900	0.9%	3,515,600	0.8%	3,512,700	0.7%	3,517,500	0.8%	3,181,600	-8.8%
Contra Costa	1,714,900	2,441,200	2,448,900	0.3%	2,447,900	0.3%	2,446,600	0.2%	2,449,900	0.4%	2,302,000	-5.7%
Solano	620,600	978,100	982,000	0.4%	980,800	0.3%	980,100	0.2%	981,600	0.4%	881,900	-9.8%
Napa	238,500	309,000	309,300	0.1%	309,200	0.1%	309,100	0.0%	309,200	0.1%	320,800	3.8%
Sonoma	853,400	1,186,200	1,189,700	0.3%	1,188,100	0.2%	1,189,100	0.2%	1,188,200	0.2%	1,133,700	-4.4%
Marin	512,000	637,100	640,900	0.6%	640,700	0.6%	640,900	0.6%	640,700	0.6%	622,500	-2.3%
Regional Total	13,128,600	17,772,800	17,868,100	0.5%	17,852,100	0.4%	17,842,300	0.4%	17,861,500	0.5%	16,975,000	-4.5%

<sup>1</sup> Average weekday daily vehicle trips include intra-regional personal travel and exclude inter-regional and truck trips.

Source: Metropolitan Transportation Commission, 2004

**Table 3.1-9: AM Peak Period Regional VMT by Facility Type and Volume to Capacity (V/C) Ratio (2000 to 2030)**

	2000	2030 Project	2030 No Project	Difference from Proposed Project	2030 Financially Constrained	Difference from Proposed Project	2030 Financially Constrained + HOT	Difference from Proposed Project	2030				
									Financially Constrained + Sales Tax	Difference from Proposed Project	Difference from Proposed Project	Difference from Proposed Project	
Freeways													
< 0.75 V/C	6,073,100	7,037,400	5,422,500	-22.9%	5,903,500	-16.1%	7,025,100	-0.2%	6,005,800	-14.7%	5,469,000	-22.3%	
0.75 to 1.00 V/C	5,012,500	6,234,700	6,927,500	11.1%	6,866,600	10.1%	6,361,800	2.0%	6,844,400	9.8%	6,953,000	11.5%	
> 1.00 V/C	819,500	1,557,200	1,939,100	24.5%	1,782,500	14.5%	1,814,900	16.5%	1,769,100	13.6%	1,741,900	11.9%	
TOTAL	11,905,100	14,829,300	14,289,100	-3.6%	14,552,600	-1.9%	15,201,800	2.5%	14,619,300	-1.4%	14,163,900	-4.5%	
Expressways and Arterials													
< 0.75 V/C	5,469,900	6,323,100	6,343,300	0.3%	6,425,200	1.6%	6,102,700	-3.5%	6,398,500	1.2%	6,184,700	-2.2%	
0.75 to 1.00 V/C	1,043,900	1,739,600	2,229,700	28.2%	2,128,100	22.3%	1,693,400	-2.7%	2,202,500	26.6%	1,866,300	7.3%	
> 1.00 V/C	118,800	244,500	319,700	30.8%	305,700	25.0%	221,300	-9.5%	294,900	20.6%	276,100	12.9%	
TOTAL	6,632,600	8,307,200	8,892,700	7.0%	8,859,000	6.6%	8,017,400	-3.5%	8,895,900	7.1%	8,327,100	0.2%	
All Facilities													
< 0.75 V/C	11,543,000	13,360,500	11,765,800	-11.9%	12,328,700	-7.7%	13,127,800	-1.7%	12,404,300	-7.2%	11,653,700	-12.8%	
0.75 to 1.00 V/C	6,056,400	7,974,300	9,157,200	14.8%	8,994,700	12.8%	8,055,200	1.0%	9,046,900	13.5%	8,819,300	10.6%	
> 1.00 V/C	938,300	1,801,700	2,258,800	25.4%	2,088,200	15.9%	2,036,200	13.0%	2,064,000	14.6%	2,018,000	12.0%	
TOTAL	18,537,700	23,136,500	23,181,800	0.2%	23,411,600	1.2%	23,219,200	0.4%	23,515,200	1.6%	22,491,000	-2.8%	

<sup>1</sup>AM peak period is two hours.

<sup>2</sup>Freeways include Freeways and Freeway-to-Freeway connectors. Expressways and Arterials include all other facilities.

<sup>3</sup>LOS - Level of Service measures traffic density in a range of A to F.

<sup>4</sup>LOS A is free-flow conditions with no delay; LOS D-E are more congested conditions with some delay possible; LOS F represents conditions of over-capacity and significant delay.

Source: Metropolitan Transportation Commission, 2004

**Table 3-1-10: Travel Data (2000 to 2030)**

	2000	2030 <i>Project</i>	No Project	Difference from Proposed Project	2030 Financially Constrained	Difference from Proposed Project	2030 Financially Constrained + HOT	Difference from Proposed Project	2030 Financially Constrained +Sales Tax	Difference from Proposed Project	2030 TRANSEDEF Smart Growth	Difference from Proposed Project
Vehicles in Use	4,781,500	7,143,300	7,227,700	1.2%	7,216,200	1.0%	7,203,400	0.8%	7,225,900	1.2%	7,001,200	-2.0%
Average Daily VMT	143,495,300	200,878,200	203,072,600	1.1%	202,823,500	1.0%	202,480,900	0.8%	203,063,100	1.1%	196,465,700	-2.2%
Engine Starts	32,053,000	45,167,000	45,712,000	1.2%	45,634,000	1.0%	45,547,000	0.8%	45,700,000	1.2%	44,278,000	-2.0%

Source: Metropolitan Transportation Commission, 2004

**Table 3.1-11: Emission Estimates for Criteria Pollutants Using EMFAC2002 Factors (2000 to 2030) (in tons per day)**

	2000	2030 <i>Project</i> <i>t</i>	No Project	Difference from Proposed Project	2030 Financially Constrained	Difference from Proposed Project	2030 Financially Constrained + HOT	Difference from Proposed Project	2030 Financially Constrained +Sales Tax	Difference from Proposed Project	2030 TRANSEDEF Smart Growth	Difference from Proposed Project
ROG	214.65	37.44	38.06	1.7%	37.91	1.3%	37.78	0.9%	37.98	1.4%	36.79	-1.7%
NOx	363.41	54.64	55.53	1.6%	55.35	1.3%	55.11	0.9%	55.46	1.5%	53.74	-1.6%
CO	2279.63	290.18	297.34	2.5%	295.56	1.9%	293.18	1.0%	296.12	2.0%	286.73	-1.2%
PM <sub>10</sub>	93.92	126.52	128.22	1.3%	127.94	1.1%	127.64	0.9%	128.13	1.3%	124.16	-1.9%
PM <sub>2.5</sub>	21.13	26.40	26.87	1.8%	26.75	1.3%	26.66	1.0%	26.84	1.7%	25.96	-1.7%

Source: Metropolitan Transportation Commission, 2004

## LAND USE, HOUSING, AND SOCIAL ENVIRONMENT

### *Farmlands*

According to the GIS analysis (as described in the Method of Analysis section of Chapter 2.3), each alternative has less of a potential impact on farmland than the Proposed Project because the alternatives include fewer transportation improvements than the Proposed Project. As shown in Table 3.1-12, of the alternatives, the Financially Constrained Plus Sales Tax alternative would impact the greatest amount of farmland and the TRANSDEF Smart Growth alternative would have the least effect. Both the Proposed Project and each alternative contain more road widening projects than extensions, intersections, or new roads.

- The No Project alternative could potentially affect 734 acres of farmland in 14 projects in six corridors. Eight of 14 are widening projects. The North Bay East-West corridor would be the most impacted.
- The Financially Constrained alternative could potentially affect 2,425 acres of farmland in 43 projects in 10 corridors. Twenty-nine of 43 are widening projects. The Sunol Gateway and Silicon Valley corridors would be the most impacted.
- The Financially Constrained Plus Sales Tax alternative could potentially affect 2,701 acres of farmland in 53 projects in 10 corridors. Thirty-five of 53 are widening projects. This alternative would cause the greatest impacts in the Sunol Gateway and Silicon Valley corridors.
- The Financially Constrained Plus HOT alternative could potentially affect 2,551 acres of farmland in 46 projects in 10 corridors. Thirty-five of 46 are widening projects. This alternative would cause the greatest impacts in the Sunol Gateway and Silicon Valley corridors.
- The TRANSDEF Smart Growth alternative could potentially affect 889 acres of farmland in nine projects in five corridors. Five of nine are widening projects. The Silicon Valley corridor would be the most impacted.

**Table 3.1-12: Type and Amount (in acres) of Farmland Potentially Affected by Alternatives**

Type	2030 Project	2030 No Project	2030 Financially Constrained	2030 Financially Constrained + Sales Tax	2030 Financially Constrained + HOT	2030 TRANSDEF Smart Growth
Farmland of Local Importance	651	218	292	443	292	145
Farmland of Statewide Importance	167	19	79	101	87	28
Grazing Land	1,674	387	1,414	1,467	1,516	529
Prime Farmland	840	89	580	628	594	104
Unique Farmland	97	20	89	63	61	21
<b>Total Farmland in Acres</b>	<b>3,430</b>	<b>734</b>	<b>2,425</b>	<b>2,701</b>	<b>2,551</b>	<b>889</b>

Source: Dyett and Bhatia, 2004

### *Land Use Disruptions/Displacement*

Using the GIS analysis, each alternative has less potential to disrupt existing land use than the Proposed Project, as shown in Table 3.1-13. Of the alternatives, the Financially Constrained Plus Sales Tax alternative could potentially disrupt the most existing land uses, and the No Project alternative has the least potential to disrupt land uses. In both the Proposed Project and each alternative, employment and residential areas would be equally affected, and at a much higher rate than urban open space.

- The No Project alternative would impact significantly fewer existing land uses than the proposed project – 1,053 acres in 11 projects in six corridors. Fifty percent is residential land. Eight of 11 are widening projects. Effects would be greatest in the Golden Gate corridor.
- The Financially Constrained alternative would impact fewer existing land uses than the Proposed Project – 3,676 acres in 99 projects in 11 corridors. Commercial and residential uses would be equally affected. Effects would be greatest in the Silicon Valley corridor.
- The Financially Constrained Plus Sales Tax alternative would impact fewer existing land uses than the Proposed Project – 4,025 acres in 123 projects in 11 corridors. Commercial and residential uses would be equally affected. Effects would be greatest in the Silicon Valley Corridor.
- The Financially Constrained Plus HOT alternative would impact fewer existing land uses than the Proposed Project – 4,070 acres in 105 projects in 11 corridors. Commercial and residential uses would be equally affected. Effects would be greatest in the Silicon Valley Corridor.
- The TRANSDEF Smart Growth alternative would impact significantly fewer existing land uses than the proposed project – 1,431 acres in 36 projects in nine corridors. Commercial and residential uses would be equally affected. Effects would be greatest in the Peninsula Corridor.

**Table 3.1-13: Existing Land Use Acres Affected by Proposed Project and Alternatives**

<i>Land Use</i>	<i>2030 Project</i>	<i>2030 No Project</i>	<i>2030 Financially Constrained</i>	<i>2030 Financially Constrained +SalesTax</i>	<i>2030 Financially Constrained +HOT</i>	<i>2030 TRANSDEF Smart Growth</i>
<i>Employment Areas</i>	2,564	311	1,568	1,699	1,693	583
<i>Residential</i>	2,419	518	1,515	1,663	1,717	646
<i>Urban Open Space</i>	857	224	593	664	660	203
<b>Total</b>	<b>5,840</b>	<b>1,053</b>	<b>3,676</b>	<b>4,025</b>	<b>4,070</b>	<b>1,431</b>

Source: Dyett and Bhatia, 2004



### *Community Disruption*

**Short Term-Impacts.** Many of the projects in all of the alternatives involve significant construction activity with the potential for intermittent disruption of normal activities in adjacent neighborhoods and communities. The level of disruption is likely to be generally proportional to the magnitude of the financial commitments required for the respective alternatives. Even the No Project alternative would result in some short-term community disruption, as it assumes construction of projects with currently committed funding. The Proposed Project has the largest regional financial investment and the longest list of construction projects and, hence, would have the greatest potential for short-term community disruption. The Financially Constrained plus Sales Tax alternative would have less construction-related disruption as would the other alternatives, in the following descending order: Financially Constrained Plus HOT Lanes, Financially Constrained and TRANSDEF Smart Growth. The TRANSDEF Smart Growth alternative would probably have a lower level of direct impact from construction of transportation improvements than even the No Project alternative, because of its emphasis on the improvement of existing transit, and its elimination of some large, committed construction projects.

**Long-Term Impacts.** The transportation improvements in the Transportation 2030 Plan have been screened through the local General Plan process and do not conflict with the respective communities' visions for their futures. Indeed, some projects are intended to mitigate past disruptions by connecting neighborhoods split by transportation corridors (bike/pedestrian trails and bridges) or to mitigate for the impacts from the ubiquity of autos in our society (by-pass and traffic calming projects). Other projects, however, can involve permanent changes to selected existing communities by intensifying development near transit nodes.

The No Project alternative would have the least potential to disrupt existing communities, while the TRANSDEF Smart Growth alternative would have the most potential. In between, the Financially Constrained, Financially Constrained Plus HOT, then the Financially Constrained Plus Sales Tax and finally the Proposed Project would have increasingly higher potential for long-term community disruption impacts.

The TRANSDEF Smart Growth alternative would have a higher potential for long-term community disruption, as it calls for increasing the housing and population densities of the region's densest communities, in many cases to levels that are higher than anticipated in the currently adopted General Plans and ABAG's Projections 2003. This is consistent with its assumptions of a higher proportion of multi-family dwellings, and higher urban densities and higher costs for automobile use. The long-term impacts for the TRANSDEF Smart Growth alternative come in two forms: one would be the effect of the transportation improvements themselves (i.e., intensified transit service levels would result in increased noise and traffic impacts and affect a number redeveloped and densely populated communities in the urban travel corridors); and the other would be the TRANSDEF land use assumptions (i.e., existing residents would experience impacts of more intensified development and population activity compared to their existing living environment). These potential effects can be mitigated, and their magnitude and duration are unknown, so the differences among the alternatives, except for the No Project alternatives, may not be significant for this impact category.

### *Consistency with Local Plans*

With the exception of the TRANSDEF Smart Growth alternative, all of the projects in all of the alternatives have been pre-screened for consistency with applicable local General Plans and Transportation Plans. The TRANSDEF Smart Growth alternative includes some projects and programs that have not been processed through the traditional public review process by the city, county, transit operator, county Congestion Management Agency, and/or MTC, and which may, therefore, not be consistent with adopted local plans.

In some jurisdictions, as previously noted, *Projections 2003* envisions policy changes at the local level. Although communities have not yet responded to *Projections 2003* by amending their General Plans to accommodate those projections, the differences in the TRANSDEF Smart Growth projections relative to *Projections 2003* are an order of magnitude greater than what is envisioned in local General Plans.

The transit-oriented development (TOD) components of the TRANSDEF Smart Growth alternative assume higher residential densities in the region's larger cities than are anticipated in their General Plans. By way of example, comparing the projected housing need under the TRANSDEF Smart Growth alternative's land use assumptions and the planned residential development potential per local General Plans in San Francisco, San Jose and the Walnut Creek/Lamorinda subdistrict shows the unplanned growth to be on the order of 134,000 to 155,000 housing units (see Table 3.1-14)<sup>4</sup>. The planned residential development potential shown in Table 3.1-14 reflects housing development not only on vacant residential land and residential infill sites but also on non-residential sites judged suitable for housing. This table notes that there is a "shortfall" under *Projections 2003* and the TRANSDEF Smart Growth alternative land use assumptions. TRANSDEF'S land use assumptions also imply lower buildout levels in many suburban communities than is assumed in their current General Plans. ABAG's *Draft Projections 2005 Monitoring Report* points out that many local general plans are out-of-date and so may understate development potential in TOD areas. ABAG's *Projections 2003* are, in the words of the Monitoring Report, "aggressive in their attempt to move the region toward the development pattern portrayed in the Smart Growth Vision."<sup>5</sup> The TRANSDEF Smart Growth alternative goes out further with its own assumptions.

While the other alternatives conform, in principle, to adopted General Plans, they could affect the rate of buildout for many communities, as the financial constraints and differing focuses of the respective alternatives can greatly affect the timing for implementation of specific improvements. This, in turn, can affect the timing of planned residential, commercial and industrial development.

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<sup>4</sup> ABAG's Local Policy Survey of existing General Plan buildout potential also reveals lower dwelling unit potential than the TRANSDEF alternative, with 71,996 units reported for San Francisco, 64,965 for San Jose, and 10,368 for Lafayette, Moraga, Orinda and Walnut Creek.

<sup>5</sup> ABAG, *Draft Projections 2005 Monitoring Report*, September 2004, pg. 27

**Table 3.1-14: Comparison of TRANSDEF'S Land Use Assumptions and Residential Development Potential in General Plans**

Aggregated Superdistricts	Increase in Households		Total Units Needed	Planned Residential Development Potential Per General Plans	Shortfall - Unplanned Growth with TRANSDEF Smart Growth
	(A) ABAG: 2000-2030	(B) Additional Households with TRANSDEF Land Use Assumptions	Columns A + B + Units for 5% vacancy Rate	(Housing Units)	(Housing Units)
San Francisco	72,897	39,693	118,220	29,190 to 45,450 <sup>1</sup>	72,770 - 88,030
San Jose	67,512	5,145	76,290	39,335 to 45,554 <sup>2</sup>	30,736-36,955
Walnut Creek					
Lamorinda	11,995	21,596	35,270	51,923	30,078
Total					133,584 – 155,063

1. New housing construction potential and maximum buildout capacity with re-zoning after environmental review in residential districts, neighborhood commercial districts, mixed use districts, Downtown, Industrial Districts and Mission Bay per Tables I-56 and I-59 San Francisco Housing Element, May 2004.

2. Planned housing supply – average yield and maximum yield – from vacant land with residential zoning, vacant land with non-residential zoning, non-vacant land planned for housing and non-vacant land in specific plan areas planned for housing per Table 38, San Jose General Plan Housing Element, April 2003.

3. Per local general plans: 2,305 units in Walnut Creek; 839 units in Moraga, 1,041 units in Orinda and 1,007 units in Lafayette.

Sources: ABAG, 2003, TRANSDEF Smart Growth Alternative, and local General Plans

## ENERGY

The energy analysis found that the No Project alternative would result in the lowest level of energy consumption (see Table 3.1-15), primarily because very little new construction (and construction energy consumption) would occur and transit energy use would be the lowest of all alternatives. Of the “build” alternatives, the Financially Constrained Plus HOT lanes alternative would consume the least amount of energy, although it would be very close to the TRANSDEF Smart Growth alternative. Financially Constrained Plus HOT lanes alternative’s lower energy consumption is due to less new construction combined with low on-road vehicle VMT and transit.

**Table 3.1-15: Estimated Daily Direct and Indirect Energy Consumption (in Billion BTUs)**

	2000	2030 No Project	2030 Project	2030 Financially Constrained	2030 Financially Constrained + Sales Tax	2030 Financially Constrained + HOT	2030 TRANSDEF Smart Growth
On-road vehicles	53.40	77.16	71.38	74.72	75.35	69.10	71.04
Transit vehicles	33.81	29.88	50.34	30.71	36.85	30.72	37.91
<b>Direct energy Total</b>	<b>87.20</b>	<b>107.04</b>	<b>121.72</b>	<b>105.43</b>	<b>112.20</b>	<b>99.82</b>	<b>108.95</b>
Manufacturing and Maintenance	27.93	34.90	35.18	35.06	35.12	34.33	33.63
Construction	-	1.10	12.12	9.38	4.55	10.14	2.85
<b>Indirect Energy Total</b>	<b>27.93</b>	<b>36.00</b>	<b>47.30</b>	<b>44.45</b>	<b>39.68</b>	<b>44.46</b>	<b>36.48</b>
<b>Total Daily Energy</b>	<b>115.13</b>	<b>143.04</b>	<b>169.02</b>	<b>149.88</b>	<b>151.88</b>	<b>144.28</b>	<b>145.44</b>
Change compared to 2000	-	24.2%	46.8%	30.2%	31.9%	25.3%	26.3%
Change compared to 2030 No Project	-	-	18.2%	4.8%	6.2%	0.9%	1.7%
Per Capita Daily Energy Usage (BTUs)	16,972	16,291	19,250	17,070	17,298	16,433	16,564

BTU: British Thermal Units

Source: ESA 2004, MTC Model Outputs 2004

## NOISE

As shown in the last row of data in Table 3.1-16, the Financially Constrained Plus HOT alternative would cause the smallest increase in the overall percentage of Bay Area wide roadway miles exposed to noise levels at or above 66 dBA relative to other alternatives evaluated; the percentage increase in roadway miles would be less than one percent, whereas all other alternatives would cause an increase of closer to two percent. In contrast, the TRANSDEF Smart Growth alternative would result in the smallest increase in the overall percentage of Bay Area wide roadway miles where noise levels would increase by 3 dBA or more relative to Base Year 2000 conditions (see the last row of data in Table 3.1-17). The TRANSDEF Smart Growth alternative would also generate significantly fewer daily vehicle trips than the Proposed Project or other alternatives. With respect to transit use, the TRANSDEF Smart Growth alternative would include new transit improvement projects not included in the Proposed Project or other alternatives. Long-term noise impacts associated with transit use would likely be greater with the TRANSDEF Smart Growth alternative than the Proposed Project and other alternatives. Considering the combined effect of traffic and transit-related noise impacts, it is expected that the Financially Constrained Plus HOT alternative would result in the least amount of impacts on noise.

**Table 3.1-16: Roadway Directional Miles > 66 dBA Noise Level, and Total Directional Miles, by Roadway Type and County**

County	Roadway Type	2000			2030 No Project			Net Change from 2000			2030 Project			Net Change from 2000			2030 Financially Constrained			Net Change from 2000		
		# over 66 dBA	Total	% over 66 dBA	# over 66 dBA	Total	% over 66 dBA	# over 66 dBA	Total	% over 66 dBA	# over 66 dBA	Total	% over 66 dBA	# over 66 dBA	Total	% over 66 dBA	# over 66 dBA	Total	% over 66 dBA	# over 66 dBA	Total	% over 66 dBA
San Francisco	Freeways	52	53	99.2%	52	53	99.2%	0	0	0.0%	52	53	99.2%	0	0	0.0%	52	53	99.2%	0	0	0.0%
	Expressways	1	2	43.6%	1	2	43.6%	0	0	0.0%	1	2	43.6%	0	0	0.0%	1	2	43.6%	0	0	0.0%
	Arterials	17	631	2.6%	26	633	4.0%	9	2	1.4%	27	633	4.3%	11	2	1.7%	26	633	4.1%	9	2	1.5%
San Mateo	Freeways	164	170	96.9%	165	170	96.9%	0	0	0.1%	164	170	96.7%	0	0	-0.2%	165	170	97.3%	1	0	0.4%
	Expressways	12	31	36.6%	16	31	49.7%	4	0	13.1%	15	31	49.2%	4	0	12.6%	16	31	50.5%	4	0	13.9%
	Arterials	6	1,062	0.6%	9	1,130	0.8%	3	68	0.2%	9	1,130	0.8%	3	68	0.2%	8	1,130	0.7%	2	68	0.2%
Santa Clara	Freeways	311	318	97.8%	319	326	97.9%	7	7	0.1%	325	333	97.7%	14	14	0.0%	317	328	96.7%	6	10	-1.1%
	Expressways	124	240	51.8%	160	235	68.2%	36	-6	16.4%	156	228	68.3%	31	-13	16.5%	169	235	72.0%	45	-6	20.3%
	Arterials	76	2,065	3.7%	117	2,067	5.7%	41	2	2.0%	113	2,073	5.5%	38	9	1.8%	106	2,072	5.1%	30	8	1.4%
Alameda	Freeways	302	305	99.0%	298	305	97.9%	-4	0	-1.2%	302	305	99.0%	0	0	0.0%	308	316	97.4%	6	11	-1.6%
	Expressways	13	36	37.6%	21	45	46.3%	7	9	8.7%	23	45	51.1%	9	9	13.5%	23	45	51.4%	10	9	13.8%
	Arterials	62	1,782	3.5%	86	1,811	4.7%	24	29	1.3%	92	1,817	5.1%	30	34	1.6%	93	1,816	5.1%	31	33	1.6%
Contra Costa	Freeways	192	194	99.1%	183	184	99.4%	-9	-10	0.3%	193	195	98.8%	1	1	-0.2%	194	195	99.2%	1	1	0.1%
	Expressways	2	17	13.0%	25	45	54.7%	22	28	41.8%	15	34	42.2%	12	18	29.2%	15	34	42.2%	12	18	29.2%
	Arterials	23	1,532	1.5%	41	1,551	2.6%	18	19	1.1%	41	1,554	2.6%	17	22	1.1%	42	1,552	2.7%	19	20	1.2%
Solano	Freeways	167	171	97.7%	171	174	98.3%	4	3	0.6%	171	174	98.3%	4	3	0.6%	171	174	98.3%	4	3	0.6%
	Expressways	37	49	76.1%	35	60	58.3%	-3	11	-17.8%	38	72	52.7%	1	23	-23.4%	39	72	54.3%	2	23	-21.8%
	Arterials	34	732	4.7%	60	734	8.2%	26	2	3.5%	60	742	8.1%	26	10	3.4%	55	742	7.5%	21	10	2.8%
Napa	Freeways	10	10	100.0%	24	24	100.0%	14	14	0.0%	24	24	100.0%	14	14	0.0%	24	24	100.0%	14	14	0.0%
	Expressways	44	47	92.8%	35	37	93.3%	-9	-10	0.6%	37	37	99.0%	-7	-10	6.3%	37	37	99.0%	-7	-10	6.3%
	Arterials	13	488	2.8%	40	484	8.3%	27	-4	5.5%	40	484	8.3%	27	-4	5.5%	40	484	8.3%	27	-4	5.5%
Sonoma	Freeways	131	131	100.0%	132	132	99.7%	1	1	-0.3%	132	132	100.0%	1	1	0.0%	132	132	99.7%	1	1	-0.3%
	Expressways	15	20	75.9%	16	20	76.6%	0	0	0.7%	16	20	76.6%	0	0	0.7%	16	20	80.7%	1	0	4.8%
	Arterials	6	1,136	0.5%	14	1,160	1.2%	8	24	0.7%	15	1,161	1.3%	9	25	0.8%	19	1,160	1.7%	14	24	1.2%
Marin	Freeways	77	77	100.0%	77	77	99.6%	0	0	-0.4%	77	77	100.0%	0	0	0.0%	77	77	99.6%	0	0	-0.4%
	Arterials	7	555	1.3%	9	559	1.6%	2	4	0.3%	8	560	1.5%	1	5	0.2%	10	559	1.8%	3	4	0.6%
Bay Area	Freeways	1,407	1,428	98.5%	1,420	1,444	98.4%	13	16	-0.1%	1,441	1,462	98.5%	34	34	0.0%	1,440	1,469	98.0%	33	41	-0.5%
	Expressways	248	442	56.2%	307	475	64.6%	58	32	8.4%	299	469	63.8%	51	27	7.6%	316	476	66.2%	67	34	10.0%
	Arterials	244	9,982	2.4%	401	10,129	4.0%	156	147	1.5%	405	10,154	4.0%	161	172	1.5%	400	10,148	3.9%	156	166	1.5%
Combined		1,900	11,853	16.0%	2,127	12,047	17.7%	228	195	1.6%	2,146	12,086	17.8%	246	233	1.7%	2,155	12,093	17.8%	256	241	1.8%

Source: Environmental Science Associates, 2004; Metropolitan Transportation Commission, 2004

**Table 3.1-16 (continued): Roadway Directional Miles > 66 dBA Noise Level, and Total Directional Miles, by Roadway Type and County**

County	Roadway Type	2030 Financially Constrained + HOT			Net Change from 2000			2030 Financially Constrained + Sales Tax			Net Change from 2000			2030 TRANSEDF Smart Growth			Net Change From 2000		
		# over 66 dBA	% over 66 dBA	Total	# over 66 dBA	% over 66 dBA	Total	# over 66 dBA	% over 66 dBA	Total	# over 66 dBA	% over 66 dBA	Total	# over 66 dBA	% over 66 dBA	Total	# over 66 dBA	% over 66 dBA	Total
San Francisco	Freeways	52	99.2%	53	0	0.0%	0	52	99.2%	53	0	0.0%	0	52	99.2%	53	0	0.0%	0
	Expressways	1	43.6%	2	0	0.0%	0	1	43.6%	2	0	0.0%	0	1	50.0%	2	0	6.4%	0
	Arterials	21	3.3%	633	4	0.6%	2	25	4.0%	633	8	1.3%	2	25	4.0%	633	9	1.4%	2
San Mateo	Freeways	164	96.7%	170	0	-0.2%	0	165	96.9%	170	0	0.1%	0	165	97.2%	170	1	0.3%	0
	Expressways	14	45.8%	31	3	9.2%	0	16	50.0%	31	4	13.4%	0	15	48.1%	31	4	11.6%	0
	Arterials	6	1.3%	1,130	0	0.0%	0	8	0.7%	1,132	1	0.1%	0	10	0.9%	1,131	4	0.3%	0
Santa Clara	Freeways	320	98.2%	326	8	0.4%	7	319	97.1%	328	7	-0.7%	10	318	97.8%	326	7	0.0%	0
	Expressways	151	64.5%	235	27	12.7%	-6	165	70.3%	235	41	18.6%	-6	156	66.6%	235	32	-6	14.8%
	Arterials	84	4.1%	2,072	8	0.4%	8	104	5.0%	2,071	28	1.3%	6	108	5.2%	2,066	32	1.6%	2
Alameda	Freeways	302	99.2%	305	0	0.1%	0	304	96.2%	316	2	-2.9%	11	299	98.2%	305	-2	-0.8%	0
	Expressways	21	47.7%	45	8	10.1%	9	23	51.4%	45	10	13.8%	9	22	56.9%	39	9	19.3%	4
	Arterials	65	3.6%	1,816	3	0.1%	33	93	5.1%	1,822	30	1.6%	39	86	4.8%	1,808	24	1.3%	0
Contra Costa	Freeways	193	98.9%	195	1	-0.1%	1	207	99.2%	208	14	0.2%	14	193	99.2%	195	1	0.1%	0
	Expressways	12	36.0%	34	10	23.0%	18	8	39.4%	21	6	26.4%	5	7	32.0%	21	5	19.0%	5
	Arterials	30	1.9%	1,552	7	0.4%	20	38	2.4%	1,570	14	0.9%	38	36	2.3%	1,554	13	0.8%	0
Solano	Freeways	171	98.1%	174	4	0.4%	3	171	98.3%	174	4	0.6%	3	171	98.1%	174	4	0.4%	0
	Expressways	38	53.2%	72	1	-22.9%	23	39	53.8%	72	1	-22.3%	23	47	76.5%	61	9	12	0.4%
	Arterials	58	7.9%	742	24	3.2%	10	58	7.8%	742	23	3.1%	10	64	8.7%	730	29	-2	4.0%
Napa	Freeways	24	100.0%	24	14	0.0%	14	24	100.0%	24	14	0.0%	14	24	100.0%	24	14	0.0%	0
	Expressways	37	99.0%	37	-7	6.3%	-10	37	100.0%	37	-6	7.2%	-10	37	99.0%	37	-7	-10	6.3%
	Arterials	40	8.3%	484	27	5.5%	-4	40	8.2%	484	26	5.4%	-4	40	8.3%	484	27	-4	5.5%
Sonoma	Freeways	132	100.0%	132	1	0.0%	1	132	100.0%	132	1	0.0%	1	132	100.0%	132	1	0.0%	0
	Expressways	16	76.6%	20	0	0.7%	0	16	80.7%	20	1	4.8%	0	16	80.7%	20	1	0	4.8%
	Arterials	13	1.1%	1,160	8	0.6%	24	15	1.3%	1,167	9	0.8%	31	15	1.3%	1,160	9	0.8%	0
Marin	Freeways	77	99.6%	77	0	-0.4%	0	77	99.6%	77	0	-0.4%	0	77	100.0%	77	0	0.0%	0
	Expressways	7	1.3%	559	0	0.0%	4	11	1.9%	559	4	0.7%	4	9	1.7%	559	2	0.4%	0
	Arterials	1,435	98.6%	1,455	28	0.1%	27	1,450	97.8%	1,482	43	-0.7%	54	1,432	98.4%	1,454	25	-26	-0.1%
Bay Area	Freeways	291	61.1%	476	43	4.9%	34	305	65.9%	463	57	9.7%	21	301	67.4%	447	53	5	11.2%
	Expressways	325	3.2%	10,148	81	0.8%	166	389	3.8%	10,180	145	1.4%	197	393	3.9%	10,126	149	144	1.4%
	Arterials	2,051	17.0%	12,079	151	0.9%	227	2,144	17.7%	12,125	245	1.7%	272	2,127	17.7%	12,028	227	175	1.7%

Source: Environmental Science Associates, 2004; Metropolitan Transportation Commission, 2004

**Table 3.1-17: Roadway Directional Miles with Significant Increase in Noise Levels (> 3 dBA), Base Year 2000 to Year 2030 Alternatives**

County	Roadway Type	2030 No Project		2030 Project		2030 Financially Constrained		2030 Financially Constrained + HOT		2030 Financially Constrained + Sales Tax		2030 TRANSDEF Smart Growth	
		> 3 dBA	% with Total > 3 dBA	> 3 dBA	% with Total > 3 dBA	> 3 dBA	% with Total > 3 dBA	> 3 dBA	% with Total > 3 dBA	> 3 dBA	% with Total > 3 dBA	> 3 dBA	% with Total > 3 dBA
San Francisco	Freeways	0	53 0.0%	2	53 4.3%	0	53 0.0%	1	53 1.9%	0	53 0.0%	0	53 0.7%
	Expressways	<1	2 28.2%	<1	2 28.2%	<1	2 28.2%	0	2 0.0%	<1	2 28.2%	<1	2 28.2%
	Arterials	88	625 14.0%	93	625 14.8%	100	625 15.9%	124	625 19.9%	99	625 15.9%	82	625 13.1%
San Mateo	Freeways	1	170 0.8%	7	170 4.3%	2	170 1.3%	6	170 3.6%	6	170 3.3%	1	170 0.8%
	Expressways	6	31 19.2%	6	31 18.4%	8	31 25.3%	3	31 9.6%	8	31 25.3%	6	31 20.4%
	Arterials	137	1,124 12.2%	144	1,124 12.8%	169	1,124 15.0%	127	1,124 11.3%	178	1,122 15.8%	146	1,122 13.0%
Santa Clara	Freeways	20	321 6.4%	41	328 12.6%	23	321 7.1%	30	321 9.5%	23	321 7.2%	19	321 5.9%
	Expressways	28	235 11.9%	21	228 9.3%	34	235 14.5%	31	235 13.2%	30	235 12.6%	16	235 6.9%
	Arterials	498	2,059 24.2%	372	2,060 18.1%	478	2,060 23.2%	337	2,060 16.3%	486	2,059 23.6%	354	2,059 17.2%
Alameda	Freeways	4	305 1.4%	7	305 2.2%	7	305 2.1%	19	305 6.3%	6	305 2.0%	3	305 1.1%
	Expressways	8	35 22.1%	11	35 31.2%	9	35 25.6%	12	35 33.9%	9	35 25.2%	7	35 20.3%
	Arterials	398	1,772 22.5%	276	1,773 15.6%	388	1,772 21.9%	245	1,772 13.8%	407	1,771 23.0%	281	1,769 15.9%
Contra Costa	Freeways	3	180 1.6%	15	190 7.7%	14	190 7.3%	16	190 8.4%	14	188 7.2%	12	188 6.2%
	Expressways	7	27 27.1%	8	17 50.0%	3	17 19.7%	1	17 5.5%	11	17 62.8%	6	17 37.0%
	Arterials	417	1,531 27.2%	332	1,531 21.6%	408	1,531 26.6%	312	1,531 20.4%	402	1,531 26.2%	281	1,531 18.3%
Solano	Freeways	5	171 2.9%	6	171 3.5%	5	171 2.7%	7	171 4.2%	4	171 2.5%	5	171 2.7%
	Expressways	14	57 24.9%	17	59 28.7%	18	59 30.3%	18	59 31.4%	17	59 29.5%	18	59 29.8%
	Arterials	233	715 32.5%	220	713 30.9%	229	713 32.2%	198	713 27.8%	222	713 31.1%	193	713 27.1%
Napa	Freeways	12	24 51.5%	11	24 48.5%	11	24 45.6%	11	24 48.5%	11	24 45.6%	12	24 51.5%
	Expressways	2	37 5.2%	0	37 0.0%	2	37 5.2%	3	37 9.1%	2	37 5.2%	0	37 0.0%
	Arterials	99	484 20.4%	57	484 11.8%	71	484 14.7%	56	484 11.7%	57	484 11.8%	49	484 10.1%
Sonoma	Freeways	6	120 4.8%	11	120 9.4%	5	120 4.3%	27	120 22.8%	6	120 4.7%	6	120 5.3%
	Expressways	0	20 0.0%	0	20 0.0%	0	20 0.0%	0	20 0.0%	0	20 0.0%	0	20 0.0%
	Arterials	151	1,119 13.5%	106	1,119 9.4%	142	1,119 12.7%	102	1,119 9.1%	129	1,114 11.6%	110	1,114 9.9%
Marin	Freeways	0	77 0.0%	11	77 14.5%	5	77 6.9%	9	77 12.1%	5	77 6.9%	0	77 0.0%
	Arterials	44	555 7.9%	34	555 6.1%	39	555 7.0%	35	555 6.3%	36	555 6.4%	41	555 7.4%
Bay Area	Freeways	52	1,418 3.7%	112	1,435 7.8%	71	1,428 5.0%	128	1,428 9.0%	74	1,426 5.2%	59	1,426 4.1%
	Expressways	66	444 14.8%	64	430 14.9%	75	437 17.1%	69	437 15.8%	77	437 17.6%	54	437 12.4%
	Arterials	2,063	9,984 20.7%	1,634	9,985 16.4%	2,023	9,984 20.3%	1,536	9,984 15.4%	2,015	9,974 20.2%	1,537	9,972 15.4%
Combined		2,181	11,847 18.4%	1,809	11,849 15.3%	2,169	11,848 18.3%	1,733	11,848 14.6%	2,166	11,837 18.3%	1,650	11,835 13.9%

Source: Environmental Science Associates, 2004; Metropolitan Transportation Commission, 2004

## GEOLOGY AND SEISMICITY

Alternatives are listed in Table 3.1-18 by the number of projects located in areas susceptible to surface fault rupture, landslides, or liquefaction hazards. However, the total number of projects susceptible to these hazards does not clearly indicate the seismically superior alternative. For example, the reconstruction of a freeway overpass in an area prone to liquefaction would be considered a seismically beneficial impact as the more earthquake hazard prone overpass would be replaced. In addition, there are numerous unmapped projects included or excluded among the various alternatives that involve seismic upgrades, which are not captured in the table summary.

**Table 3.1-18: Alternative Comparison of Number of Projects Susceptible to Surface Fault Rupture, Landslides or Liquefaction**

	2030 No Project	2030 Project	2030 Financially Constrained	2030 Financially Constrained +Sale Tax	2030 Financially Constrained + HOT	2030 TRANSDEF Smart Growth
<i>Type of Hazard</i>						
Surface Fault Rupture	3	31	25	26	28	7
Landslides	4	31	20	25	24	7
Liquefaction	10	107	74	89	81	28
<i>Increase compared to No Project</i>						
Surface Fault Rupture	NA	28	22	23	25	4
Landslides	NA	27	16	21	20	3
Liquefaction	NA	97	64	79	71	18
NA = Not Applicable						

Source: Environmental Science Associates, 2004

The Proposed Project results in the least seismic safety hazards of all the alternatives. Although it includes the most projects in areas susceptible to seismic hazards, the Proposed Project also includes the most projects that involve seismic retrofits or replacement of older, more earthquake-hazard prone facilities. The least advantageous alternative for seismic safety is difficult to quantify between the No Project and TRANSDEF Smart Growth alternatives as they include or exclude several projects that would benefit seismic safety. The overall number of construction projects in Table 3.1-18 presents a clearer analysis of potential impacts on soil resources. The superior alternative for this factor is the No Project, followed by the TRANSDEF Smart Growth alternative.

## WATER RESOURCES

Alternatives are listed in Table 3.1-19 by the number of projects located in areas susceptible to flooding during a 100-year storm event. However, the total number of projects located within the 100-year floodplain is not the sole factor to consider when comparing alternatives for hydrology and water resources. Within the broader scope of potential increases in nonpoint source pollutants and runoff associated with both short-term construction and long-term increased impervious surface area, the No Project involves the fewest number of projects and the TRANSDEF Smart Growth alternative has the second-fewest number of projects.



**Table 3.1-19: Alternative Comparison of Number of Projects Located within the 100 year Floodplain**

	2030 No Project	2030 Project	2030 Financially Constrained	2030 Financially Constrained + Sale Tax	2030 Financially Constrained + HOT	2030 TRANSDEF Smart Growth
<i>Type of Hazard</i>						
100-year Floodplain	9	72	50	52	54	14
<i>Increase compared to No Project</i>						
100-year Floodplain	NA	+63	+41	+43	+45	+5
NA = Not Applicable						

Source: Environmental Science Associates, 2004

**BIOLOGICAL RESOURCES**

The No Project alternative would result in the fewest potential impacts on wetlands, special status species, and designated or proposed critical habitat (Table 3.1-20). Additionally, impacts on biologically unique or sensitive communities and long-term development or fragmentation of undeveloped lands are lowest under the No Project alternative. Under the five “build” alternatives, based on the number of projects that would affect biological resources, the analysis found that the TRANSDEF Smart Growth alternative has the fewest number of projects that could affect sensitive wetlands, special status species, and critical habitat.

The Proposed Project would likely result in the greatest potential impacts on wetlands, special status species, and designated or proposed critical habitat, due to the fact that the most new construction will occur under the Proposed Project. However, the precise impacts of this alternative on long-term development or fragmentation of undeveloped lands are not known. The Proposed Project would facilitate passage from urban centers to rural areas and could contribute to their growth; but the resulting development patterns would not necessarily fragment undeveloped lands. Among the alternatives, due to its larger magnitude, it is reasonable to conclude that the Proposed Project would have an incrementally greater impact on biologically unique or sensitive communities and long-term development or fragmentation of undeveloped lands.

**Table 3.1-20: Comparison of Project Impacts to Wetlands, Special Status Species, and Critical Habitat between Alternatives.<sup>1</sup>**

Project Alternative	Project Type												Total Number of Projects Affecting Resource			
	Financially Constrained Element: Committed				Financially Constrained Element: New Commitment				Vision Element							
	Wetlands	Special Status Species	Critical Habitat		Wetlands	Special Status Species	Critical Habitat		Wetlands	Special Status Species	Critical Habitat		Wetlands	Special Status Species	Critical Habitat	
2030 No Project	8	7	3		0	0	0		0	0	0		8	7	3	
2030 Proposed Project	8	7	3		28	23	9		25	22	9		61	52	21	
2030 Financially Constrained	8	7	3		0	0	0		0	0	0		8	7	3	
2030 Financially Constrained + Sales Tax	8	7	3		13	11	6		10	10	6		31	28	15	
2030 Financially Constrained + HOT	8	7	3		5	3	2		5	3	2		18	13	7	
2030 TRANSDEF Smart Growth	2	2	0		3	2	1		3	2	1		7	6	2	

<sup>1</sup> Impacts are listed in this table according to the number of projects that would affect sensitive resources. This analysis attempts to capture the overall impact trends based on the number of number of potential projects that could have resource conflicts. The magnitudes of individual project impacts are not assessed in this analysis.

Source: Environmental Science Associates, 2004

## VISUAL RESOURCES

The No Project alternative would have the fewest impacts on scenic resources. Among the other alternatives, TRANSDEF Smart Growth alternative would have the least impact in comparison with the Proposed Project, with only eight projects in designated scenic corridors or highway corridors eligible for designation and 18 projects total with potential visual impacts (see Table 3.1-21).

**Table 3.1-21: Comparison of Criteria for Scenic Impacts, by Alternative**

<i>Criteria</i>	<i>2030 Proposed Project</i>	<i>2030 No Project</i>	<i>2030 Financially Constrained</i>	<i>2030 Financially Constrained + Sales Tax</i>	<i>2030 Financially Constrained + HOT</i>	<i>2030 TRANSDEF Smart Growth</i>
1. Blocks panoramic views of significant features.	6	0	4	5	5	3
2. Alters the appearance of area near scenic highways.	40	6	25	32	27	8
3. Creates significant contrasts.	28	5	18	23	21	4
4. Adds an incongruous visual element.	6	1	4	5	4	3
<b>Total Impacts</b>	<b>80</b>	<b>12</b>	<b>51</b>	<b>65</b>	<b>57</b>	<b>18</b>

## CULTURAL RESOURCES

Because it contains the fewest projects, the No Project alternative would have the least potential to disturb, disrupt, or significantly affect cultural resources, including historical, archeological, and paleontological resources and human remains. The TRANSDEF Smart Growth alternative would also have a limited impact. The other alternatives would have less of a potential to affect cultural resources than the Proposed Project, but the difference would not be significant.

## GROWTH-INDUCING EFFECTS

As described in Chapter 2.11, the Proposed Project is not expected to induce growth in the region beyond that projected in ABAG's *Projections 2003*. Growth-inducing effects may occur at the local level, but these effects would be consistent with *Projections 2003*, which anticipate more infill and densification in urban areas.

The alternatives to the Proposed Project would not have regional growth inducing effects, as they are not producing infrastructure to accommodate more growth than is projected by ABAG. re. Similar to the Proposed Project, alternatives may result in local growth inducing effects, particularly for those alternatives that create new high capacity rail nodes, which could stimulate investment at and around these stations. The alternative that produces the most new light rail and rapid transit rail service would be the TRANSDEF Smart Growth alternative (62 percent of the transit seat miles is attributable to rail), where the other alternatives would have lower and comparable levels of rail service. (The TRANSDEF Smart Growth alternative would, however, have 36 percent less rail service than the Proposed Project). To the extent that urban bus service

would stimulate growth along arterial corridors, TRANSDEF has the second highest level of bus transit service of all the alternatives (Financially Constrained Plus Sales Tax alternative is the highest). However, this type of local growth would be subject to approval by local jurisdictions. There are no assurances that local governments will adopt policy changes and rezoning needed to implement these changes. As a consequence, the potential scope of these local growth-inducing effects and statistically significant differences among alternatives, except for the No Project alternative, cannot be determined precisely with any confidence.

Another gross measure that could be used to look at locational growth impacts of transportation investments would be relative differences in vehicle hours of delay by county, as significantly lower levels of delay could indicate enhanced attractiveness of an area for development. In this regard, the Financially Constrained plus HOT alternative produces the lowest vehicle hours of delays for most every county of the five alternatives (but delays are still higher overall by 8 percent compared to the Proposed Project). Among the other alternatives, the Financially Constrained alternative has lower delay for Alameda and Contra Costa counties and the TRANSDEF Smart Growth Alternative has the lowest delay for Santa Clara and Solano Counties. The No Project alternative has the highest delay for every county.

From the perspective of a jobs/housing balance and the growth-inducing impacts that imbalances may create, the residential land use assumptions made for the TRANSDEF Smart Growth alternative appear to exacerbate imbalances at the subregional level because they are not accompanied by development of employment opportunities. This could lead to localized growth-inducing effects because an imbalance, particularly where there are fewer jobs than employed residents, can result in growth inducement as local officials and developers take actions to add non-residential land uses and increase the job base. Looking at the 2030 differences in the ratios of jobs to employed residents for *Projections 2003* and the TRANSDEF Smart Growth alternative, summarized by superdistrict and county in Table 3.1-22, the TRANSDEF Smart Growth alternative's land use assumptions do not seem to further the goal of parity between job opportunities and the number of employed residents, which could have local growth-inducing impacts. For example, in San Francisco's Mission District, Fremont/Union City and Santa Rosa/Sebastopol, the projected ratio of jobs/employed residents with the TRANSDEF alternative would be lower in 2030 than with *Projections 2003*; in nearly all of these superdistricts, ABAG's *Projections 2003* showed the ratio moving closer to 1.0, while in 13 of the 34 superdistricts the ratio is worse under the TRANSDEF Smart Growth alternative.<sup>6</sup> Further, in Sonoma and Napa counties, the ratio drops below 1.0, suggesting somewhat more out-commuting. These imbalances could have local growth-inducing effects as the jurisdictions affected seek more non-residential development to achieve parity between local jobs and the number of employed residents. The consequence of this reaction to the TRANSDEF Smart Growth alternative land use assumptions may be greater than the local growth-inducing potential of the Proposed Project.

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<sup>6</sup> In Santa Rosa/Sebastopol, the ratio increased from 1.14 to 1.26 consistent with Santa Rosa's role as a subregional employment center.

**Table 3.1-22: Comparison of Projected 2030 Jobs/Housing Balance ABAG Projections 2003 & TRANSDEF Smart Growth Alternative**

Superdistrict	ABAG Projections 2003	TRANSDEF Smart Growth	Percent Difference
	Jobs/Employed Residents	Jobs/Employed Residents	
1 Downtown San Francisco	4.95	4.34	-12.3%
2 Richmond District	0.69	0.79	14.2%
3 Mission District	0.85	0.76	-10.0%
4 Sunset District	0.46	0.43	-5.9%
5 Daly City/San Bruno	1.18	1.22	3.4%
6 San Mateo/Burlingame	0.99	1.01	2.2%
7 Redwood City/Menlo Park	1.01	1.07	5.3%
8 Palo Alto/Los Altos	1.61	1.64	2.3%
9 Sunnyvale/Mountain View	2.28	2.34	2.6%
10 Saratoga/Cupertino	0.84	0.85	1.0%
11 Central San Jose	1.00	0.95	-5.3%
12 Milpitas/East San Jose	0.63	0.70	10.4%
13 South San Jose/Almaden	0.65	0.62	-4.4%
14 Gilroy/Morgan Hill	1.15	0.99	-14.2%
15 Livermore/Pleasanton	1.20	1.21	0.8%
16 Fremont/Union City	0.95	0.84	-12.1%
17 Hayward/San Leandro	0.94	1.05	11.7%
18 Oakland/Alameda	1.01	1.03	1.9%
19 Berkeley/Albany	1.09	1.27	17.1%
20 Richmond/El Cerrito	0.71	0.70	-2.2%
21 Concord/Martinez	0.85	0.91	7.0%
22 Walnut Creek/Lamorinda	1.05	1.02	-3.4%
23 Danville/San Ramon	0.78	0.69	-10.6%
24 Antioch/Pittsburg	0.55	0.40	-26.7%
25 Vallejo/Benicia	0.69	0.68	-1.5%
26 Fairfield/Vacaville	0.66	0.74	11.7%
27 Napa	1.02	0.92	-10.1%
28 St. Helena/Calistoga	1.21	1.07	-11.8%
29 Petaluma/Sonoma	0.95	0.86	-9.5%
30 Santa Rosa/Sebastopol	1.26	1.11	-11.9%
31 Healdsburg/Cloverdale	0.60	0.55	-8.1%
32 Novato	1.09	1.04	-4.9%
33 San Rafael	0.96	0.96	0.4%
34 Mill Valley/Sausalito	0.94	0.88	-6.4%
Bay Area	1.05	1.05	0.0%
San Francisco	1.49	1.41	-5.6%
San Mateo	1.07	1.11	3.6%
Santa Clara	1.12	1.14	1.2%
Alameda	1.02	1.05	2.2%
Contra Costa	0.76	0.75	-2.0%
Solano	0.67	0.71	6.4%
Napa	1.07	0.96	-10.5%
Sonoma	1.04	0.94	-9.5%
Marin	0.99	0.96	-3.2%

Source: ABAG Projections 2003; Dyett and Bhatia 2004

## **ENVIRONMENTALLY SUPERIOR ALTERNATIVE AMONGST ALTERNATIVES EVALUATED**

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As noted, the CEQA Guidelines require each EIR to identify the environmentally superior alternative among the alternatives analyzed. If the No Project alternative is identified as the environmentally superior alternative, then the EIR must identify another of the alternatives from among the alternatives analyzed.

There are numerous tradeoffs in impacts associated with the various alternatives. The alternatives also would result in varying degrees of achieving the Transportation 2030 Plan (Proposed Project) objectives.

Table 3.1-23 and Table 3.1-24 compare the environmental effects of the alternatives to the Proposed Project. A qualitative and numerical rating system is used for this assessment, rating the alternatives as to whether they would result in the same, worse, or better environmental impacts as the Proposed Project. There are two limitations of this type of ranking: first, the relative differences are no longer expressed in a ratio scale (e.g. how many mile of roadway or acres of land are affected and what the percentage differences are); and second, the rating system assumes each impact area has equal weight in the overall assessment, without considering scale or temporal differences (e.g. whether the effect is a one-time event or is on-going). That said, this system is useful as a starting point in assessing which alternative is environmentally superior.

Since the primary objectives of the Proposed Project are to improve system efficiency and mobility of people and goods in the Bay Area, an alternative that performs substantially worse than the Proposed Project with respect to transportation performance criteria would not achieve even the basic objectives of the Proposed Project.

As shown in Table 3.1-23, the Proposed Project is environmentally preferred in the transportation impact area because it is designed to accommodate the anticipated regional growth and increased travel demand over the next 25 years. Overall, the No Project alternative is the environmentally superior alternative because it would have comparatively less new construction activity and hence fewer environmental effects, particularly in the resource areas of energy, water, biology, visual, cultural, land use and growth inducement. The No Project alternative, however, cannot be selected as the environmentally superior alternative according to CEQA and would not achieve the proposed project objectives.

If the No Project alternative is excluded, the TRANSDEF Smart Growth alternative is the next environmentally superior alternative if all impact areas are artificially given equal weight. However, policy makers may value some issue areas as more important than others and the relative magnitude of impacts within each issue area must be considered in the adoption of a preferred alternative. If, based on project objectives, the transportation issue area is rated the most important of all issue areas, then the Proposed Project would perform better than all alternatives. For example, with the TRANSDEF Smart Growth alternative, a detailed breakdown of the four components of the transportation rating shows that the TRANSDEF Smart Growth alternative is the least beneficial when it comes to average travel time for work and non-work

trips and vehicle hours of delay, key indicators of how the transportation system is performing for the typical traveler.

**Table 3.1-23: Comparison of Alternatives to the Proposed Transportation 2030 Plan**

<i>Impact Area</i>	<i>No Project</i>	<i>Financially Constrained</i>	<i>Financially Constrained + Sales Tax</i>	<i>Financially Constrained + HOT</i>	<i>TRANSDEF Smart Growth</i>
Transportation*	5	4	4	3	4
Air Quality	3	3	3	3	③
Energy	①	2	2	1	1
Geology and Seismicity	4	②	3	3	4
Water Resources	①	2	3	3	1
Biological Resources	①	2	2	2	1
Noise	2	2	2	①	2
Visual Resources	①	2	3	3	2
Cultural Resources	①	2	3	3	2
Land Use, Housing, and Social Environment	②	3	3	3	3
Growth Inducement	②	3	3	3	3
<b>Total</b>	<b>23</b>	<b>27</b>	<b>31</b>	<b>28</b>	<b>26</b>

Relative to the Proposed Project: 1=Much more favorable; 2=More favorable; 3=Comparable; 4=Less favorable; 5=Much less favorable.

① Circles represent the environmentally superior alternative for each issue area.

\* Proposed Project is the environmentally superior alternative for transportation issue area.

Despite the relatively favorable ratings for a number of the impact areas for the TRANSDEF Smart Growth alternative, there are several unanswered questions about the feasibility of this alternative and its ability to meet the project objectives.

- Foremost is the fact that the performance of the TRANSDEF Smart Growth alternative is predicated on land use assumptions that can not be realized without substantial governmental intervention, through regulation or new incentives to create public funding for housing and infrastructure improvements and increased levels of public services and facilities which would be needed by the proposed intensification of residential development in the urban core. Unresolved conflicts with local General Plans, community character and local economic development objectives also would affect implementation of the land use assumptions.
- A significant number of approved and funded transportation projects are excluded from the TRANSDEF Smart Growth alternative so funding can be shifted to other projects;

however, some of these funding re-allocations would require voter approval or rejection of prior voter mandates. In addition, the ability to shift funds normally used to construct projects to support daily operation of an expanded transit system has not been fully analyzed.

- While TRANSDEF presumes that regional agencies have certain authority and powers to impose new pricing strategies, these concepts have not been tested in a legislative or legal framework. Indeed, some pricing strategies such as parking cash-out are expressly limited in application by state law. The TRANSDEF Smart Growth alternative assumes regional funding commitments to specific projects established through years of planning and public involvement can be overturned and that the public will accept a new set of transportation priorities. There is also a question about the viability of the proposed pricing strategies on a regional scale and their effectiveness in achieving the outcomes envisioned in the TRANSDEF Smart Growth alternative given that most have not been previously implemented in the Bay Area. These include the universal employer parking cash out concept, a regional residential Ecompass program, and the concept of having MTC condition funds it allocates to local jurisdictions based on certain commute alternatives requirements. Some proposals would need to be implemented jurisdiction by jurisdiction and could require voter-approval.

Policy makers will need to decide if the underlying assumptions made for the TRANSDEF Smart Growth alternative are reasonable, feasible and consistent with and supportive of the Transportation 2030 Plan's goals and objectives. Also, policy makers will be required to judge the relative importance of the various issue areas in making their final decision. The Commission will address these questions during its deliberations on this EIR.



**Table 3.1-24: Summary of Alternatives Comparison**

Project	No Project	Financially Constrained	Financially Constrained + Sales Tax	Financially Constrained + HOT	TRANSDEF Smart Growth
<b>Transportation</b>					
Shortest average travel time per trip (e.g., 31.1 minutes for work trips).	Slightly longer average travel time for all trip types.	Slightly longer average travel time for all trip types.	Slightly longer average travel time for all trip types.	Slightly longer average travel time for all trip types except for slightly shorter average non-work trips.	Slightly longer average travel time for all trip types except for slightly shorter average truck trips.
High level of job accessibility by autos and transit.	Slightly poorer access to jobs by autos, and significantly poorer access to jobs by transit.	Equivalent access to jobs by autos, but much poorer access to jobs by transit.	Equivalent access to jobs by autos; considerably poorer access to jobs by transit.	Considerably poorer access to jobs by autos and transit.	Great improvement in access to jobs by autos and transit due largely to compact, transit-oriented land use patterns.
Increase in average weekday vehicle trips due to increased travel demand compared to existing (2000) conditions.	Equivalent number of average weekday vehicle trips compared to the Proposed Project.	Equivalent number of average weekday vehicle trips compared to the Proposed Project.	Equivalent number of average weekday vehicle trips compared to the Proposed Project.	Equivalent number of average weekday vehicle trips compared to the Proposed Project.	Slightly lower daily vehicle trips for Solano, Alameda, and Contra Costa counties.
Increased vehicle miles traveled at LOS F for all facility types compared to existing (2000) conditions.	Greater vehicle miles traveled at LOS F for all facility types compared to the Proposed Project.	Same as No Project alternative, except slightly fewer vehicle miles traveled at LOS F for fwy, expwys, and arterials.	Same as the Financially Constrained alternative.	Fewer vehicle miles at LOS F for expressways and arterials (9.5 percent reduction) due to the shift of vehicles to HOT lanes.	Greater amount of vehicle miles traveled at LOS F compared to the Proposed Project (roughly 12 percent increase).

**Table 3.1-24: Summary of Alternatives Comparison**

Project	No Project	Financially Constrained	Financially Constrained + Sales Tax	Financially Constrained + HOT	TRANSDEF Smart Growth
<b>Air Quality</b>					
Lower vehicle emissions for smog forming pollutants and carbon monoxide due primarily to improvements in automobile engines and fuels; higher particulate matter compared to 2000 levels due to increased amounts of airborne road dust produced by more autos using Bay Area roads.	Slightly higher emissions of ROG, NOx, CO, and PM <sub>10</sub> and PM <sub>2.5</sub> than the Proposed Project, but this difference is not significant.	Slightly higher emissions of ROG, NOx, CO, and PM <sub>10</sub> and PM <sub>2.5</sub> than the Proposed Project, but this difference is not significant.	Slightly higher emissions of ROG, NOx, CO, and PM <sub>10</sub> and PM <sub>2.5</sub> than the Proposed Project, but this difference is not significant.	Slightly higher emissions of ROG, NOx, CO, and PM <sub>10</sub> and PM <sub>2.5</sub> than the Proposed Project, but this difference is not significant.	Slightly lower emissions of ROG, NOx, CO, and PM <sub>10</sub> and PM <sub>2.5</sub> than the Proposed Project, but this difference is not significant.
<b>Land Use</b>					
A total of 3,430 acres of farmland could potentially be affected by 59 projects in 10 corridors.	Less farmland impacted: 734 acres in 14 projects in six corridors.	Less farmland impacted: 2,425 acres in 43 projects in 10 corridors.	Less farmland impacted: 2,701 acres in 53 projects in 10 corridors.	Less farmland impacted: 2,551 acres in 46 projects in 10 corridors.	Significantly less farmland impacted: only 889 acres in 9 projects in five corridors.
A total of 5,840 acres of existing land use could potentially be disrupted by 151 projects in 12 corridors.	Significantly fewer land uses disrupted: 1,053 acres in 11 projects in six corridors.	Fewer land uses disrupted: 3,676 acres in 99 projects in 11 corridors.	Fewer land uses disrupted: 4,025 acres in 123 projects in 11 corridors.	Fewer land uses disrupted: 4,070 acres in 105 projects in 11 corridors.	Significantly fewer land uses disrupted: 1,431 acres in 36 projects in nine corridors.
<b>Energy</b>					
Increased consumption of direct and indirect energy types.	A 15.3% lower increase in energy consumption.	An 11.3% lower increase in energy consumption.	A 10.3% lower increase in energy consumption.	A 14.8% lower increase in energy consumption.	A 14% lower increase in energy consumption.

**Table 3.1-24: Summary of Alternatives Comparison**

Project	No Project	Financially Constrained	Financially Constrained + Sales Tax	Financially Constrained + HOT	TRANSDEF Smart Growth
<b>Noise</b>					
Significant temporary construction-related noise impacts on surrounding areas.	Temp. construction-related noise impacts. Far fewer projects=lower overall construction-related noise. Most impacts could be mitigated to a less-than-significant level.	Temp. construction-related noise impacts. Fewer projects=lower overall construction-related noise. Most impacts could be mitigated to a less-than-significant level.	Temp. construction-related noise impacts. Fewer projects=lower overall construction-related noise. Most impacts could be mitigated to a less-than-significant level.	Temp. construction-related noise impacts. Fewer projects=lower overall construction-related noise. Most impacts could be mitigated to a less-than-significant level.	Temp. construction-related noise impacts. Far fewer projects=lowest overall construction-related noise. Most impacts could be mitigated to a less-than-significant level.
1.7 percent overall increase in roadway miles exposed to noise levels at or above 66 dBA. 3 dBA or more increase in noise levels relative to 2000 conditions along 15.3 percent of the modeled roadways.	Slightly lower (1.6 percent) increase in roadway miles exposed to noise levels at or above 66 dBA. More modeled roadways (18.4 percent) experience a 3 dBA or more increase in noise levels relative to 2000.	Slightly higher (1.8 percent) increase in roadway miles exposed to noise levels at or above 66 dBA. More modeled roadways (18.3 percent) experience a 3 dBA or more increase in noise levels relative to 2000.	Equivalent increase in roadway miles exposed to noise levels at or above 66 dBA. More modeled roadways (18.3 percent) experience a 3 dBA or more increase in noise levels relative to 2000.	Lower (0.9 percent) increase in roadway miles exposed to noise levels at or above 66 dBA. Fewer modeled roadways (14.6 percent) experience a 3 dBA or more increase in noise levels relative to 2000.	Equivalent increase in roadway miles exposed to noise levels at or above 66 dBA. Fewer modeled roadways (13.9 percent) experience a 3 dBA or more increase in noise levels relative to 2000.
Forecast population and job growth served by Transportation 2030 Projects would increase traffic volumes and noise levels along some of the region's travel corridors.	95,246 additional daily vehicle trips could have an incrementally greater impact on noise levels along travel corridors in the region.	79,301 additional daily vehicle trips could have an incrementally greater impact on noise levels along travel corridors in the region.	88,670 additional daily vehicle trips could have an incrementally greater impact on noise levels along travel corridors in the region.	69,494 additional daily vehicle trips could have an incrementally greater impact on noise levels along travel corridors in the region.	877,133 fewer daily vehicle trips could have an incrementally smaller impact on noise levels along travel corridors in the region, but more transit use would cause higher long-term noise impacts.

**Table 3.1-24: Summary of Alternatives Comparison**

<i>Project</i>	<i>No Project</i>	<i>Financially Constrained</i>	<i>Financially Constrained + Sales Tax</i>	<i>Financially Constrained + HOT</i>	<i>TRANSDEF Smart Growth</i>
<b>Geology and Seismicity</b>					
Overall increase in seismic safety.	Less of an increase in seismic safety.	Less of an increase in seismic safety.	Less of an increase in seismic safety.	Less of an increase in seismic safety.	Less of an increase in seismic safety.
Increased soil erosion associated with construction.	Less of an increase in construction-related soil erosion.	Less of an increase in construction-related soil erosion.	Less of an increase in construction-related soil erosion.	Less of an increase in construction-related soil erosion.	Less of an increase in construction-related soil erosion.
Negligible increase in potential long-term maintenance or repair of soil expansion or settlement impacts.	Less of an increase in soil expansion or settlement impacts.	Negligible decrease in soil expansion or settlement impacts.	Negligible decrease in soil expansion or settlement impacts.	Negligible decrease in soil expansion or settlement impacts.	Negligible decrease in soil expansion or settlement impacts.
<b>Water Resources</b>					
Increased potential adverse impacts to water quality associated with construction.	Fewer potential adverse construction related impacts.	Fewer potential adverse construction related impacts.	Fewer potential adverse construction related impacts.	Fewer potential adverse construction related impacts.	Fewer potential adverse construction related impacts.
Increased adverse impacts to water quality, flooding, or groundwater resources due to increased impervious surface area.	Smaller increases in impervious surface area.	Smaller increases in impervious surface area.	Smaller increases in impervious surface area.	Smaller increases in impervious surface area.	Smaller increases in impervious surface area.
<b>Biological Resources</b>					
61 projects could result in the temp. disturbance to or permanent loss of wetlands.	Fewer (8) projects could affect wetland resources.	Fewer (8) projects are expected to affect wetlands.	Fewer (31) projects could affect sensitive wetlands.	Fewer (18) projects could affect sensitive wetlands.	Fewer (7) projects could affect sensitive wetlands resources.
Greatest number of biologically unique or sensitive communities affected.	Substantially fewer impacts on biologically unique or sensitive communities.	Similar in magnitude to impacts under No Project.	Roughly 1/2 fewer biologically unique or sensitive communities affected.	Roughly 1/3 fewer biologically unique or sensitive communities affected.	Fewest number of biologically unique or sensitive communities affected of "Project alternatives."

**Table 3.1-24: Summary of Alternatives Comparison**

Project	No Project	Financially Constrained	Financially Constrained + Sales Tax	Financially Constrained + HOT	TRANSDEF Smart Growth
52 projects located in or adjacent to habitat for special status plant or wildlife species.	Fewer (7) projects could affect special status species.	Fewer (7) projects could affect special status species.	Fewer (28) projects could affect special status species.	Fewer (13) projects could affect special status species.	Fewer (6) projects could affect special status species.
21 projects occur within designated or proposed critical habitat for one or more listed species. Such impacts are not considered significant.	Fewer (3) projects occur within designated or proposed critical habitat. Such impacts are not considered significant.	Fewer (3) projects within designated or proposed critical habitat. Such impacts are not considered significant.	Fewer (15) projects within designated or proposed critical habitat. Such impacts are not considered significant.	Fewer (7) projects within designated or proposed critical habitat. Such impacts are not considered significant.	Only two projects occur within designated or proposed critical habitat. Such impacts are not considered significant.
The precise long-term effects on undeveloped lands are not known. It would facilitate passage from urban centers to rural areas and could contribute to their growth; however, the result would not necessarily fragment undeveloped lands.	Development or fragmentation of undeveloped lands would be substantially less.	Development or fragmentation of undeveloped lands would be comparable in magnitude. The rate of development is unknown.	Roughly 3/4 fewer critical habitats communities affected.	Roughly 1/3 fewer critical habitats communities affected.	Development or fragmentation of undeveloped lands would be substantially less.
<b>Visual Resources</b>					
Six projects could block panoramic views of significant features.	No views would be blocked.	Fewer (4) views would be blocked.	Fewer (5) views would be blocked.	Fewer (5) views would be blocked.	Half as many (3) views would be blocked.
Forty projects could alter the appearance of areas near scenic highways.	Only (6) scenic areas would be altered.	Fewer (25) scenic areas would be altered.	Fewer (32) scenic areas would be altered.	Fewer (27) scenic areas would be altered.	Significantly fewer (8) scenic areas would be altered.
28 projects could create significant contrasts with the existing landscape.	Significantly fewer (5) projects could create contrasts.	Fewer (18) projects could create contrasts.	Fewer (23) projects could create contrasts.	Fewer (21) projects could create contrasts.	Only four projects could create contrasts.

**Table 3.1-24: Summary of Alternatives Comparison**

Project	No Project	Financially Constrained	Financially Constrained + Sales Tax	Financially Constrained + HOT	TRANSDEF Smart Growth
While most projects will add some visual element, six have been identified as being highly incongruous.	Only one incongruous visual element would be added.	Four incongruous visual elements would be added.	Five incongruous visual elements would be added.	Four incongruous visual elements would be added.	Three incongruous visual elements would be added.
<b>Cultural Resources</b>					
Ground disturbing activities have the potential to disturb, destroy, or significantly affect cultural resources.	Less of a potential to disturb, destroy, or significantly affect cultural resources.	Less of a potential to disturb, destroy, or significantly affect cultural resources.	Less of a potential to disturb, destroy, or significantly affect cultural resources.	Less of a potential to disturb, destroy, or significantly affect cultural resources.	Less of a potential to disturb, destroy, or significantly affect cultural resources.
Urban development supported by Proposed Project has the potential to disturb, destroy, or significantly affect cultural resources.	Less of a potential to disturb, destroy, or significantly affect cultural resources.	Less of a potential to disturb, destroy, or significantly affect cultural resources.	Less of a potential to disturb, destroy, or significantly affect cultural resources.	Less of a potential to disturb, destroy, or significantly affect cultural resources.	Less of a potential to disturb, destroy, or significantly affect cultural resources.

## **3.2 CEQA Required Conclusions**

This chapter assesses the impacts of the proposed Transportation 2030 Plan in several subject areas specifically required by CEQA, including significant irreversible changes, significant unavoidable impacts, cumulative impacts, and impacts found to be not significant. These subject areas are evaluated based on the analysis in Part Two: Settings, Impacts, and Mitigation Measures, of this EIR.

### **SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES**

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Significant irreversible environmental changes are those irretrievable commitments that consign non-renewable resources to uses that future generations will probably be unable to reverse. Irretrievable commitments of non-renewable resources associated with the transportation improvements in the proposed Transportation 2030 Plan would include:

- Consumption of significant amounts of nonrenewable energy for construction, maintenance, and operation of transportation improvements.
- Use of building materials, fossil fuels, and other resources for construction, maintenance and operation of transportation improvements.
- Conversion of some resource lands, habitat areas, and other undeveloped lands into transportation uses.
- Increased volumes of water runoff from new covered surfaces for highway and transit projects with increased demand on natural and built stormwater collection facilities.
- Visual impacts from transportation improvements, to the extent they obstruct existing views or are in sharp contrast to the existing setting, particularly in rural areas, open space areas, and on scenic highways.

### **SIGNIFICANT UNAVOIDABLE IMPACTS**

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Significant unavoidable impacts are those that cannot be mitigated to a level that is less than significant. Part 2 of this EIR identifies the following significant unavoidable impacts:

- Implementation of the proposed Transportation 2030 Plan could convert farmland, including prime agricultural land designated by the State of California, to transportation use.
- Implementation of the Proposed Transportation 2030 Plan could disrupt or displace existing land uses, neighborhoods, and communities in the short term.
- Concurrent implementation of the proposed Transportation 2030 Plan and forecast development of residential and employment land uses would result in expansion of urban areas and changes in land use and the character of neighborhoods and districts in the Bay Area.

- Forecast population and employment growth that would be served by transportation improvements in the Transportation 2030 Plan will result in increased traffic volumes in individual counties in the Bay Area and could, in turn, increase noise levels along some of the travel corridors in those counties where sound suppression treatments have not been implemented.
- The implementation of the Proposed Project is likely to substantially increase the consumption of direct and indirect energy types.
- Seismic events could damage existing and proposed transportation infrastructure through surface rupture, ground shaking, liquefaction, landslides and tsunamis
- Construction of certain improvements in the proposed Transportation 2030 Plan could affect visual resources by adding or expanding transportation facilities in rural or open space areas, blocking views from adjoining areas, blocking or intruding into important vistas along roadways, and changing the scale, character, and quality of designated or eligible Scenic Highways.
- The construction of soundwalls along freeways and arterials, where they are used to reduce noise levels in surrounding residential areas, could significantly alter views from the road reducing visual interest and sense of place while also limiting views and sunlight from adjoining areas.
- Forecast urban development that would be served by transportation improvements in the proposed Transportation 2030 Plan could significantly change the visual character of many areas in the region, especially where development would occur on visually prominent hillsides or in existing rural or open space lands.
- Proposed transportation improvements in the Transportation 2030 Plan could have deleterious impacts on special-status plant and/or wildlife species identified as endangered, candidate, and/or special status by the CDFG or USFWS.
- Forecast urban development that would be served by transportation improvements in the Transportation 2030 Plan, combined with improved regional mobility provided by the Plan, could contribute to the conversion of undeveloped land to urban uses, resulting in the removal or fragmentation of habitat area.

## **CUMULATIVE IMPACTS**

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In this EIR, the cumulative impact analysis considers the possible effects of all the projects in the proposed Transportation 2030 Plan together with projected regional growth and the increase in regional travel produced by the Bay Area's increased population and jobs. These cumulative impacts would include:

- $PM_{1.0}$  and  $PM_{2.5}$  emissions are projected to increase substantially over existing conditions (2000) due to projected cumulative regional growth and the attendant increase in automobile travel. (*Significant, potentially mitigable, but strategies not defined*)
- Concurrent implementation of the proposed Transportation 2030 Plan and regional and local land use policies associated with ABAG's Projections would result in expansion of



urban areas and changes in land use and the character of neighborhoods and districts in the Bay Area. *(Significant, unavoidable)*

- Forecast population and employment growth that would be served by transportation improvements in the Transportation 2030 Plan will result in increased traffic volumes in individual counties in the Bay Area and could, in turn, increase noise levels along some of the major travel corridors in those counties. *(Significant, unavoidable)*
- The projected population increase in the Bay Area will result in increased travel on all modes of transportation. This would result in an increased risk of exposure of people and property to the potentially damaging effects of strong seismic shaking, fault rupture, seismically-induced ground failure and slope instability. *(Significant, but mitigable)*
- Forecast urban development that would be served by transportation improvements in the Transportation 2030 Plan, combined with new public and private infrastructure improvements to accommodate future planned urban development, could create degrade regional water quality, reduce groundwater recharge, or result in increased flooding. *(Significant, mitigable)*
- Forecast urban development that would be served by transportation improvements in the proposed Transportation 2030 Plan could significantly change the visual character of many areas in the region, especially where development would occur on visually prominent hillsides or in existing rural or open space lands. *(Significant, unavoidable)*
- Forecast urban development that would be served by transportation improvements in the Transportation 2030 Plan, combined with regional mobility provided by the Plan, could contribute to the conversion of undeveloped land to urban uses, resulting in the removal or fragmentation of habitat area. *(Significant, unavoidable)*
- Forecast urban development that would be served by transportation improvements in the proposed Transportation 2030 Plan could have the potential to disturb, destroy, or significantly affect cultural resources. *(Significant, mitigable)*

These types of impacts are not limited to the Bay Area but are characteristic of any area that is experiencing population and employment growth.

## **IMPACTS FOUND NOT TO BE SIGNIFICANT**

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This EIR focuses on potentially significant impacts. CEQA requires that an EIR provide a brief statement indicating why various possible significant impacts were determined to not be significant and were not discussed in detail. For the issue areas addressed in Chapter 2, all potential impacts are identified, regardless of their magnitude. Issue areas determined to not be significant and not addressed in this EIR include the following.

### **HAZARDOUS MATERIALS**

No significant impacts on hazardous materials are expected to occur as a result of the proposed Transportation 2030 Plan. If a project were to be adjacent to a hazardous materials site, a project-specific environmental document would address the impact.

## **MINERAL RESOURCES**

The proposed Transportation 2030 Plan will not affect mineral resources, as no substantive mineral resources have been identified in areas where new transportation improvements will occur.

## **PUBLIC SERVICES & UTILITIES**

Implementation of the proposed Transportation 2030 Plan will not cause a significant increase in demand for public services or utilities.

## **RECREATION**

No significant adverse effects on recreational uses or facilities are expected. Minor, short-term adverse effects may occur if proposed Transportation 2030 projects are constructed near recreational facilities.